

The REFRIGERATION & AIRCONDITIONING *Business* —

SEPTEMBER 1961

Sell Icemakers

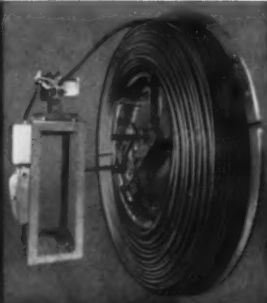
... they double
your profit
opportunity
on each call

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UNIVERSITY MICROFILMS
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WHAT
YOU
SHOULD KNOW
ABOUT
LEAK
DETECTION

Upgrade:

The magazine for the Installing Contractor-Dealer of airconditioning
and commercial and industrial refrigeration



WE GO TO GREAT LENGTHS
TO SATISFY YOUR NEEDS...

... in fact up to 2000 feet of
copper tube in a single continuous coil!

Viking's specially-designed "Bull Blocks"
draw the tube at the rate of 1500 feet
per minute. A unique conveyor system,
designed by Viking, automatically moves
the coils to finishing operations and rigid
tests for hardness, wall-thickness, and roundness.

You can have continuous coil tube from
Viking in a large variety of lengths made
on specially designed equipment, by the newest
scientific methods, under the supervision of skilled
personnel. But whatever you order,
one thing is certain: we go to great lengths
to make sure you *get* what you ordered:
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and air conditioning applications.



VIKING

COPPER TUBE CO.

CLEVELAND 10, OHIO



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ALCO'S

New

P.O.S.

CHILLER CONTROL

THERMO EXPANSION VALVE

Alco's New P. O. S. Valve
is engineered with the
Solenoid Pilot Stop Valve as an
integral part of the P. O. Valve.

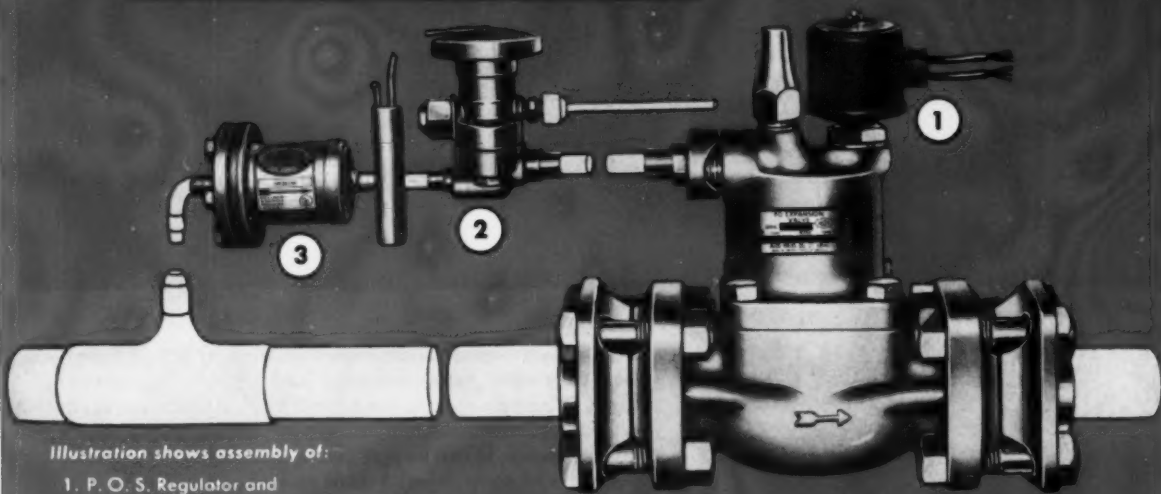


Illustration shows assembly of:

1. P. O. S. Regulator and Solenoid Stop
2. TCL—Pilot Thermo® Valve
3. H290—Line Strainer

ALCO P. O. S. VALVE ASSEMBLY—designed and engineered specifically for wide load applications—particularly recommended for refrigeration systems having capacity reduction—the **ALCO SOLENOID PILOT STOP VALVE** insures positive liquid "Shut-off."

ALCO PILOT OPERATED THERMO EXPANSION VALVES—give a positive control to 15% of nominal capacity with minimum superheat.

ALCO LIQUID LINE STRAINERS—insure positive protection of working parts from solder and dirt.

Capacities: 20 to 200 tons
Refrigerants 12 and 22

For Specifications—

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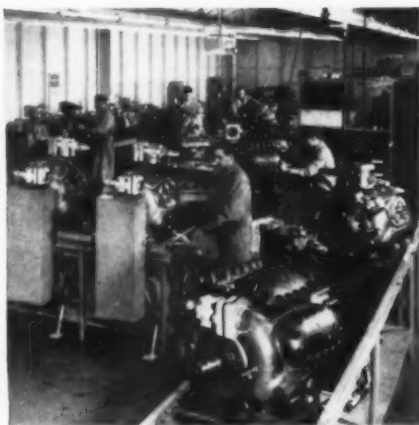
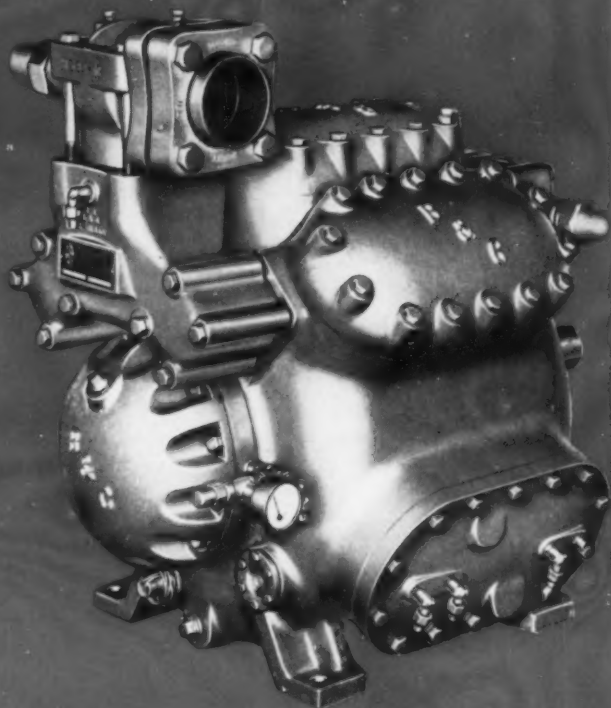
BUY SECURITY • BUY QUALITY • BUY ALCO

8220-2

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors • Solenoid Valves
Refrigerant Filter-Driers • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

CANADIAN AGENT: A. C. & R. Products Ltd., 2857 Lawrence, E. Scarborough, Ontario.
Excluding the provinces of British Columbia and Alberta.
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no
motor
burn-out
system
contamination
with
this
"open"
compressor



B&G Compressors are built in atmosphere-controlled shops under rigidly checked manufacturing methods. Available in capacities from 7½ to 150 tons.

B&G builds "open" compressors because in actual operation they offer many exclusive and outstanding advantages. Where an open compressor is used, elaborate precautions to evacuate and dehydrate a refrigeration system are not necessary. It can be serviced by the average contractor—no special tools or equipment needed.

Motor burn-out in a closed system leads to system contamination—with an exceedingly involved procedure necessary to clean up the system. This means considerable down-time and possible large loss of revenue or spoilage.

Quieter operation with less vibration are distinguishing features of the B&G Compressor. It is engineered to establish higher standards of performance...ruggedly built for longer life. It has fewer parts, hence presents fewer maintenance problems. All units have *one* bore—a few interchangeable parts will service them all.



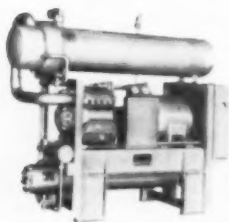
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A FULL LINE OF REFRIGERATION AND AIR CONDITIONING "PACKAGES" AND COMPONENTS



B&G Package Liquid Cooler



B&G Evaporators



B&G Centrifugal Pumps



B&G Condensers

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SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

The REFRIGERATION & AIRCONDITIONING Business

SEPTEMBER 1961

FEATURES

37 Let's Talk Business: editorial of the month

If you aren't completely satisfied with what your organization accomplished this year, now is the time to start planning for '62

38 Product Quality — is it your responsibility?

Upgrade Everybody from producer to installer shares the burden, these manufacturing and service executives agree

40 What readers say about product quality

Upgrade Two installing contractors, a wholesaler, and a distributor speak their mind about this month's Project Upgrade topic

42 Sell icemakers

... they double your profit opportunity on each call

44 "We spend \$1000 a year

... to sell icemakers by direct mail," says this Philadelphia distributor, "and it has proved a profitable investment."

45 Here are your markets for humidifiers

There are no limits to the profit you can make selling humidity control for industrial and commercial applications

48 Joint ARI-public school night courses

Upgrade ... provide top-grade service training in Syracuse

51 Applications Manual by Arthur H. Farr

Careful design, clever installation make both customer and contractor happy with year-round mortuary job

53 Contractor develops portable tree freezer

... to help science study the effects of freezing temperatures on fruit spoilage

68 Service Clinic for Contractors

- Electronic leak detector can mean more service calls, more profits
- Don't be a packhorse on installation jobs. A homemade pump cart will lighten your load.

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DEPARTMENTS

- 8 Business Trends
- 14 Business Briefs
- 19 Useful Literature
- 24 Recent Installations

- 30 Product Data
- 54 Contractor-Dealer Activities
- 56 Wholesaler Activities
- 98 People on the Move

Who's for Las Vegas?

I am eligible for a
MARLEY  **TOUR**

Contractor Johnson Refrigeration, Inc.
 Address 627 - 15th Avenue
 City East Moline, State Ill.
 J. H. Hansen

I installed a MODEL # 4315
 TYPE Marley SERIAL NO. 3991
☒ COOLING TOWER
☐ AIR COOLED CONDENSER

For CUSTOMER Mosenfelder's
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 OPERATOR _____ DATE INSTALLED 2/16/61

Product Purchased From SUPPLIER R. S. Stover Company
 CITY Marshalltown, Iowa SALESMAN John K. McKay
 This Card Must Be Mailed Before February 1, 1962

MR. AND MRS. JOHN H. HANSEN*

... and Marley is picking up the tab for their transportation and stay in the "Entertainment Capital!"

How come? Because Mr. Hansen participated in Marley's "Customer Certification" program. Mr. Hansen of Johnson Refrigeration, Inc., of East Moline, Illinois, filled out a Customer Certification card each time he installed a cooling tower or air cooled refrigerant condenser, and mailed it to Marley. That's all—except that one of these cards won a 3-day all-expense-paid vacation to Las Vegas for Mr. Hansen and his wife.

WHO'S FOR MIAMI? . . . WHO'S FOR MEXICO? . . . COULD BE YOU!

What's next? Two more wonderful vacation packages for two!

So it's not too late for you to take part in this Marley-sponsored program dedicated to better customer education and service.

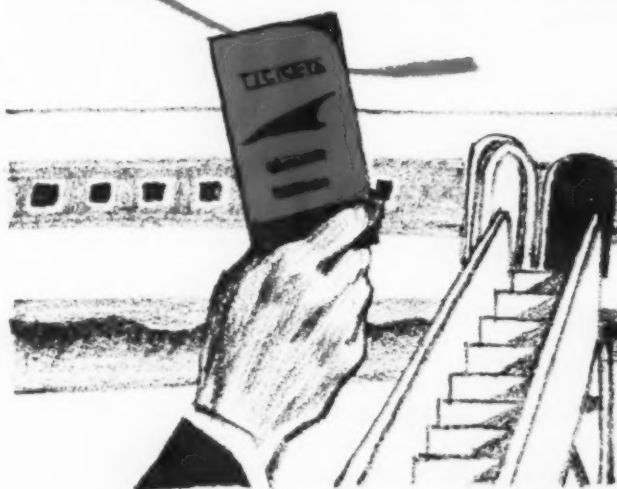
Who's eligible to participate in Marley's "Customer Certification" program?

Any contractor who installs packaged cooling towers or refrigerant condensers.

For complete details on the program—and Marley's complete line of cooling equipment—just see your nearby Marley representative or distributor, or write us direct.

THE MARLEY COMPANY • KANSAS CITY, MISSOURI

AQUATOWERS® — AQUACOOLEDERS® — DRICOOLEDERS® — SPRATOWERS® — PERMATOWERS®



Mr. Hansen* (center) receiving his award

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SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS



for central
air-conditioning
installations,
there are—

3 BIG REASONS

you'll like EC&M starters!

They're easy to install Use either copper or aluminum power wiring—these starters have provisions for both. What's more, you can add pushbuttons, selector switches, pilot lights or extra electrical interlocks as needed in the field (see circled picture above). For maximum safety, these starters are equipped with 110-volt control circuits.

Your customers will like them They'll like the quiet-operating DC magnets, supplied by self-contained transformers and rectifiers. Thermal or magnetic relays provide positive overload protection, and heavy-duty, mill-type contactors are supplied at no extra cost—a real "plus" factor in dependability and long life.

You can get expert help locally Our Field Engineers in more than 100 offices can give you all the local service and selection help you need. They know the specifications of every air-conditioner manufacturer, and can match any system you install. They are up to date on local power company restrictions—always a big help when it comes to buying air-conditioning starters.

...

GET THE COMPLETE STORY on EC&M starters for large HP, low and high voltage air-conditioning units. Square D also offers NEMA Size 1 through 5 starters for auxiliary pumps, fans and small compressors. For details, write Square D Company, EC&M Division, 4500 Lee Road, Cleveland 28, Ohio.



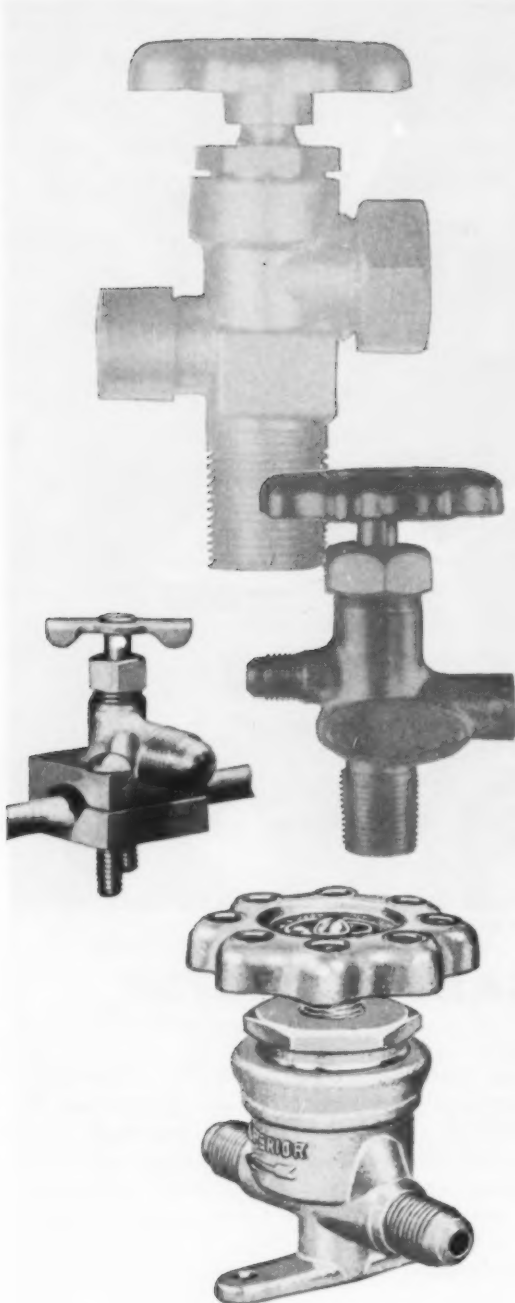
SQUARE D COMPANY

EC&M DIVISION • CLEVELAND 28, OHIO

wherever electricity is distributed and controlled

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6126



Significant Valve Developments Come from Superior



In its close, working relationship with the refrigeration industry, Superior Valve & Fittings Company has engineered numerous trend-setting concepts into its valves and accessory products. From flare fitting to the most complex refrigerant transfer system, Superior has pioneered simplicity in design and construction. The result is exacting performance and virtually maintenance-free service.

Specify Superior and take advantage of Superior quality . . . in engineering, manufacturing, testing and performance. Superior Products are sold through lead-

ing refrigeration wholesalers . . . there's one located in your vicinity.

If your firm deals in liquids or gases under pressure, you'll be dollars ahead by investigating Superior Valve & Fittings Company.

3540



Superior

valve and fittings company

1509 W. LIBERTY AVE. • PITTSBURGH 26, PA.

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Detecting Auto Air-Conditioning Leaks . . .

"My H-6 Satisfies Customers... Every Time"

**Reports Mr. J. W. STEARNS, Pres., (shown below),
Joe Stearns Automotive Refrigeration
Phoenix, Arizona**

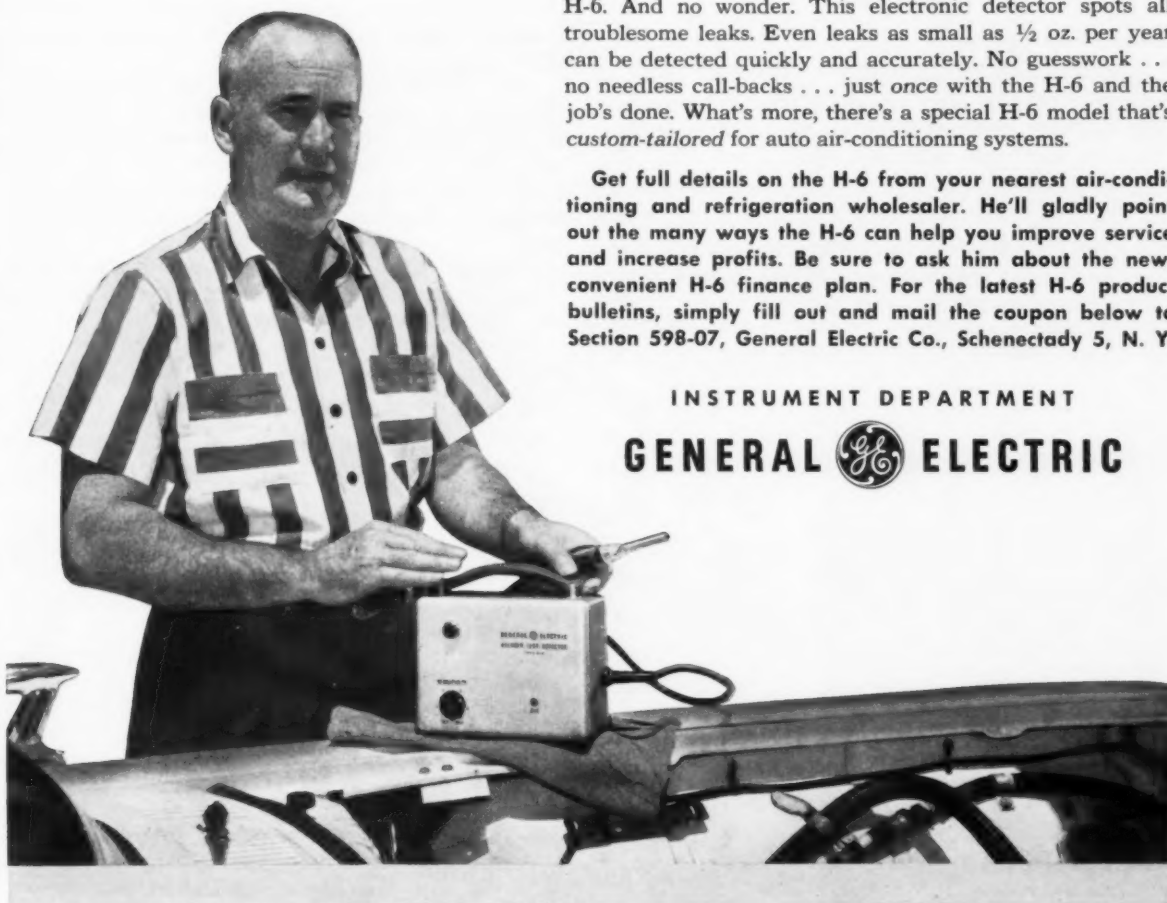
"In minutes," says Mr. Joe Stearns, "our H-6 pinpoints auto air-conditioning system leaks that other, less-sensitive detectors miss . . . even after hours of searching. We've found that this quick, positive H-6 service attracts new customers and keeps them satisfied. And, with the H-6 we can cut service call time . . . reach more customers per day . . . and boost our profits."

Like Mr. Stearns, many auto air-conditioning servicemen—and their customers, too—rely on the dependable H-6. And no wonder. This electronic detector spots all troublesome leaks. Even leaks as small as ½ oz. per year can be detected quickly and accurately. No guesswork . . . no needless call-backs . . . just once with the H-6 and the job's done. What's more, there's a special H-6 model that's custom-tailored for auto air-conditioning systems.

Get full details on the H-6 from your nearest air-conditioning and refrigeration wholesaler. He'll gladly point out the many ways the H-6 can help you improve service and increase profits. Be sure to ask him about the new, convenient H-6 finance plan. For the latest H-6 product bulletins, simply fill out and mail the coupon below to Section 598-07, General Electric Co., Schenectady 5, N. Y.

INSTRUMENT DEPARTMENT

GENERAL  ELECTRIC



Find out for yourself why
Distributor Dan says you save
time and boost profits with
a G-E Type H-6 Leak Detector . . .
clip coupon and mail today.



General Electric Co.
Section 8598-07
Schenectady 5, N. Y.

Please send by return mail, Bulletin GEA-6827, "The Type H-6 Leak Detector," and GEZ-3100, "The Type H-6 Leak Detector for Servicing Automobiles."

Name

Title

Company

Address

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BUSINESS *Trends*

HOW OUR BUSINESS IS DOING

SALES IN MAY (Bureau of Census) for airconditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

DOWN 10% from a year ago

UP 12% from previous month

SALES FOR 1961 so far are:

DOWN 7% from 1st 5 months a year ago

INVENTORIES IN MAY (Bureau of Census) for airconditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

UP 4% from a year ago

UP 3% from previous month

CURRENT LIABILITIES IN JUNE for business failure of 1 airconditioning contractor were \$44,000 (Dun & Bradstreet). Compare this to:

No failures a year ago

1 failure with \$130,000 liabilities in May

GENERAL BUSINESS INDICATORS

| | Latest Period | Previous Period | % Change |
|--|------------------|--------------------|-------------|
| Housing Starts (thousands) | | | |
| Month ending 6/30/61 | 136.9 | 130.6 | +4.8 |
| New Construction , put in place (\$ billions) | | | |
| Month ending 6/30/61 | 5.1 | 4.7 | +8.5 |
| Unemployment (% of labor force) | | | |
| Month ending 6/30/61 | 6.8 | 6.9 | -1.5 |
| Manufacturers' Inventories (\$ billions) | | | |
| Month ending 5/31/61 | 53.4 | 53.4 | No change |
| Manufacturers' Unfilled Orders (\$ billions) | | | |
| Month ending 5/31/61 | 45.9 | 45.8 | +0.2 |
| Retail Sales (\$ billions) | | | |
| Month ending 6/30/61 | 18.3 | 18.1 | +1.1 |
| Personal Saving (\$ billions) | | | |
| Quarter ending 3/31/61 | 23.7 | 22.7 | +4.4 |
| Disposable Personal Income (\$ billions) | | | |
| Quarter ending 3/31/61 | 354.3 | 354.9 | -0.2 |
| Gross National Product (\$ billions) | | | |
| Quarter ending 3/31/61 | 500.8 | 504.5 | -0.7 |
| Industrial Production Index (1957 = 100) | | | |
| Month ending 6/30/61 | 110 | 108 | +1.9 |

Source: U.S. Dept. of Commerce

Foreign competition offers challenge to U.S. business

There's nothing to fear from foreign competition. "If we maintain sound economic policies at home, the industrial resurgence of other nations can benefit, rather than hurt, our economy."

These statements come from a study prepared by National Association of Manufacturer's economic advisory committee, made up of a cross-section of 27 businessmen across the nation.

"In fact," the report revealed, "foreign competition can have a more beneficial effect since it tends to impose the same rigid discipline which internal competition imposes on individual firms."

"We can profit by such discipline, provided we understand the lessons it teaches us and can act on them."

"Foreign competition should be regarded as a challenge for us to show the good sense to do the things we ought to be doing anyway."

What are they?

- Remove tax barriers to capital formation;
- Authorize sound depreciation policies;
- Curb monopolistic powers of labor unions; and
- Provide sound economic climate for business growth.

By doing these things, the report predicts, our economy will be strengthened and our standard of living raised.

Will our country have to lower its standard of living to meet this competition? No, says NAM. "Foreign trade raises productivity, and hence the standard of living, because a nation can concentrate on those activities in which it is most proficient."

The report pointed out that Western European nations and Japan have raised their productive efficiency to a high degree, chiefly by sticking to the principles of (1) sound money; (2) the free market; and (3) encouragement of private enterprise.

"They have shown more concern than the U.S. has in recent years for controlling inflation, perhaps because they have had more experience with its damaging effects," noted the study.

"These nations are interested in technological innovations which used to be considered a special characteristic of the American economy. As a result, U.S. manufacturers are meeting stepped-up competition from abroad, both in domestic and in foreign markets."

Yet the report says this won't damage our economy.

"On the contrary, these developments abroad

Continued on page 99



"DRI-COR" the High Flow... High Drying Capacity... Acid Removing... Refrigerant Filter-Drier with Granular Desiccant and Advanced Design Molded Core

The only molded core made by ceramic bonding of highly efficient desiccant particles. All inert fillers are removed by ceramic fire completely activating the core. Permits maximum flow and depth filtration at minimum pressure drop. Dryness assured by Abso-Dry® pressure sealing and Brass Flare Nuts.

CAPACITY R-12 up to 20 TONS
RANGE R-22 up to 25 TONS

DRI-COR Advanced Molded Core

Design Provides Uniform Core Porosity
No Inactive Cement or Binder

DRI-COR Two Stage Drying

Progressive Filtration . . .
500 P.S.I. Working Pressure

DRI-COR Drying And Filtering

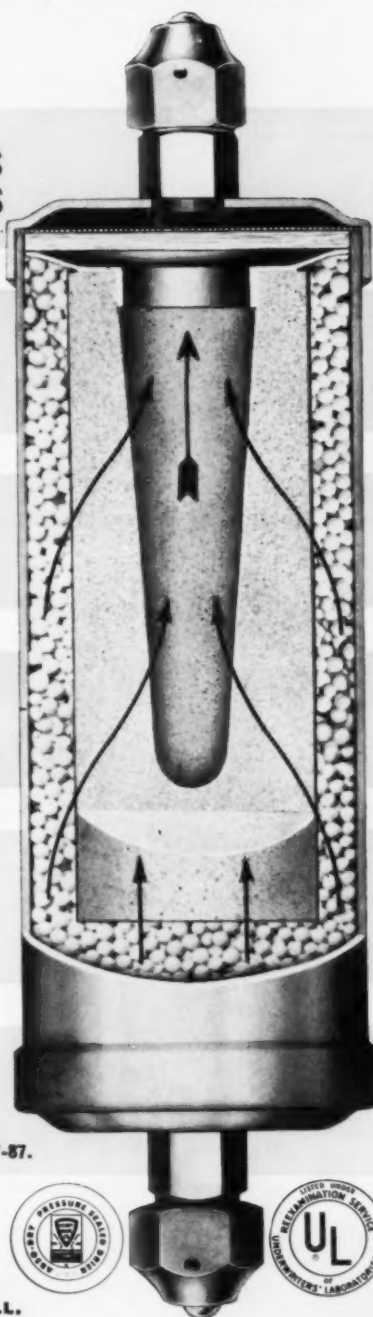
Properly Proportioned . . .
Complete range of sizes

DRI-COR Low Pressure Drop

Transverse Flow for Rapid
Moisture and Acid Adsorption

DRI-COR Pressure Sealed

Permits Continued Desiccant
Reactivation Prior to Use



Also Available in Replaceable Cartridge Types . . . Write for DRI-COR bulletin V-57.

HENRY VALVE COMPANY

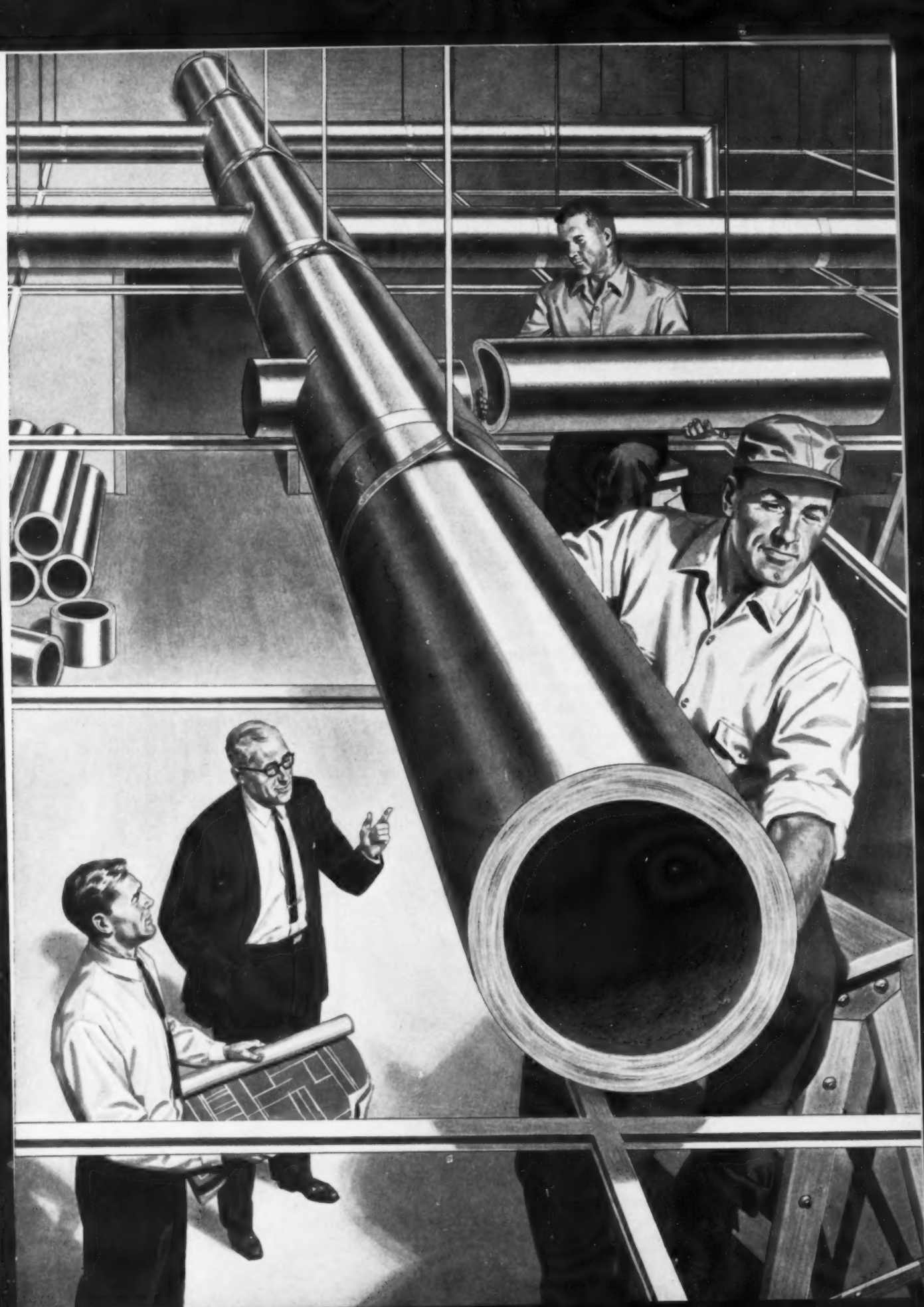
For Refrigeration, Air Conditioning and Industrial Applications

MELROSE PARK, ILLINOIS, U.S.A. CABLE: HEVALCO, MELROSE PARK, ILL.

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THE REFRIGERATION & AIRCONDITIONING BUSINESS/SEPTEMBER 1961





New G-B Duct with welded aluminum casing gives you air distribution, thermal insulation, sound absorption, and vapor barrier—all in one economical product!

New G-B Duct is made entirely of high-density fiber glass insulation enclosed in a hardened aluminum casing and sealed by a unique welding process. It is the one product that fulfills all these requirements: • *meets strictest fire codes for commercial heating and air conditioning* • *gives the superior thermal efficiency inherent in high-density fiber glass insulations* • *reduces noise as effectively as 1½" thick duct liner* • *cuts installation cost as much as 50% . . . each 6' section combines thermal insulation, sound absorber, and vapor barrier in one lightweight, ready-to-use air duct* • *provides the same air friction coefficient, diameter for diameter, as bare sheet metal, thus eliminating conversion calculations.* Before you write your next specification, it will pay you to thoroughly investigate G-B Duct. Write for detailed information today.



GUSTIN-BACON
Manufacturing Company
228 W. 10th St., Kansas City, Missouri

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This emblem wants to work for you

Whenever people see this famous emblem, they're reminded to 'find it fast' in the Yellow Pages. And when you associate your business . . . your name . . . with this emblem, you're reminding prospects to find you in the Yellow Pages when they're ready to buy. So—if you're advertising in the Yellow Pages now, it's just

good sense to display this emblem in your other advertising, on your business vehicles, at your place of business. And if you aren't advertising in the Yellow Pages yet, it's high time you did. Call the Yellow Pages man at your Bell Telephone Business Office for details on how you can put this emblem to work.

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Important Break-through!

Greatest News Ever in 2-Way Radio!

New "E" Line Puts Quality RCA Radio in Reach of Every Business Man!



e
EFFICIENCY
LINE

New RCA "Efficiency" 2-Way Radio drastically reduces co-channel interference, skip signals and ignition noise—gives you a sharp, clear channel of communication. First of the new "E" Line Radios, this is the finest UHF 2-way radio ever offered by RCA... and at the lowest price ever.

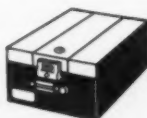
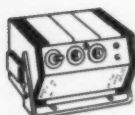
Combination control panel, speaker and power supply unit mounts in less than 7" space under dash. No separate control panels or speaker—single compact unit completely eliminates clutter.

Transistorized power supply cuts vehicle battery drain to provide more economical and efficient operation. Operates from 6 or 12 volts—easy power conversion without wire changes, soldering or extra accessories.

Now, you can enjoy the money-making, time-saving advantages of 2-way radio at its best... for less! Lease or purchase plans. And RCA service technicians are on hand to keep your equipment operating at its peak. Send for complete information.



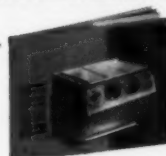
The Most Trusted Name
in Radio
RADIO CORPORATION OF AMERICA



RADIO CORPORATION OF AMERICA
Telecommunication Center, Dept. Z-261
Meadow Lands, Pa.

- ☐ Please send literature on the new RCA "E Line" 2-Way Radio for 450 mc band.
☐ Have Communications Specialist call.

NAME _____ TITLE _____
FIRM _____
TYPE OF BUSINESS _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



circle 57 on reader service card

BUSINESS *Briefs*

Four specialized controls help solve replacement problem for Honeywell

A new marketing concept aimed at the problem of replacing thousands of different residential heating and cooling controls has been started by Minneapolis-Honeywell Regulator Co.

Company vice president K. L. Wilson said the problem has been getting more involved and difficult to cope with each year.

A newly-engineered line of 170 specialized, adaptable controls is the solution. These controls, say

further wrapping by merely addressing a special label.

This Tradeline program is designed to:

- Reduce the amount of slow-moving stock since wholesaler can choose only those models which he will need locally. With each model replacing dozens, he can be sure of greater turn-over per model, re-

sulting in more volume of sales per foot of shelving and more profit from less investment.

- Simplify inventory and book-keeping. Single item orders will be decreased.

- Improve service. Dealers will make fewer calls and pick up larger orders. With fewer models, wholesalers can offer a greatly increased and more flexible replacement line. By using Honeywell's cross-reference guide, wholesalers will be able to provide the proper replacement in less time.



STYRENE PACKAGE for Minneapolis-Honeywell's new "Tradeline" thermostat is lightweight and functional. It needs no further packaging for mailing. Gas valves, thermocouples, pilot burners, and other replacement controls are packaged the same.

the manufacturer, will replace more than 93% of the 18,000 variations of residential controls now sold by Honeywell and its competitors.

There are only four specialized "Tradeline" controls. They will replace 133 Honeywell thermostats used in home installations, plus hundreds of competitive models and scores of discontinued models.

One Tradeline oil burner relay will replace 49 oil burner relay models; three gas valves will replace all 49 Honeywell gas valves now in use.

Minneapolis-Honeywell feels this line will reduce by 80% the model numbers of all brands of controls carried by wholesalers. Each replacement control is packaged in a lightweight styrene box. This box may be used for mailing without

American-Standard's new Tonrac line features compact centrifugal design

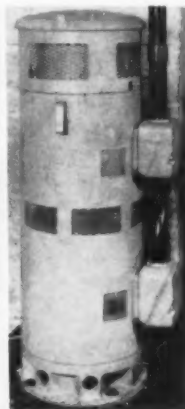
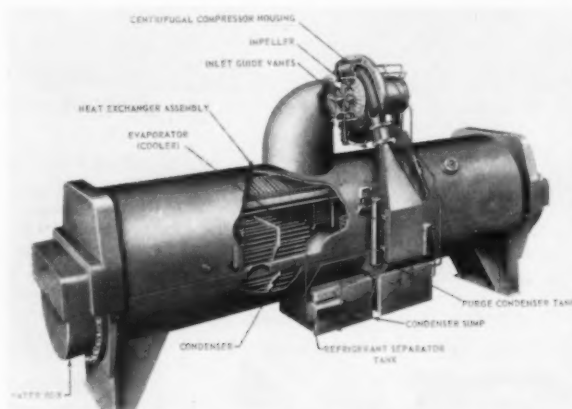
A new hermetic centrifugal refrigeration machine of radical design has been introduced by American-Standard's Industrial Division to serve as the heart of central station chilled water airconditioning and processing systems.

Named the "Packaged Tonrac," it is available in eight size increments from 50 to 100-ton nominal refrigeration capacity. It is completely piped and factory insulated, so requires no auxiliary water piping, refrigerant piping, or control tubing piping on the job site.

The company claims it is less than half as big and half as heavy as any comparable conventional centrifugal unit on the market, greatly broadening its range of applications. Its packaged features make it easy to install. The completely assembled machine will pass through a standard 36" door.

Key to the compact design is a new liquid-refrigerant-cooled electric motor which drives the refrigerant compressor at 18,000 rpm. All heat generated by motor wind-

Continued on page 93



RADICAL DESIGN features of American-Standard's new Packaged Tonrac centrifugal chiller are shown in cutaway view. Separate power unit is shown in photo at right.

Crystal Tips® ICE MAKERS

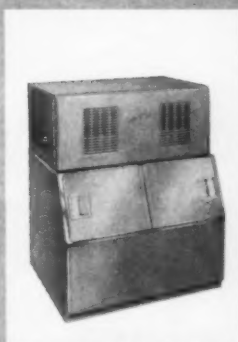
Every model is a MONEY-MAKER FOR YOU!

THE ONLY COMPLETE LINE OF 2-IN-1 ICE MAKERS!

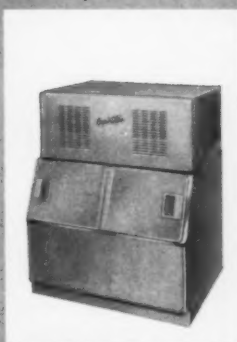
It's an ice cube maker—it's an ice chip maker—it's 2-in-1!



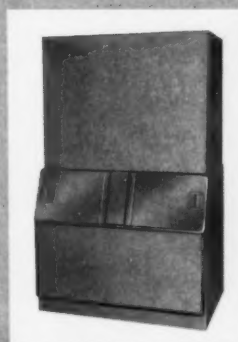
B-11



B-200

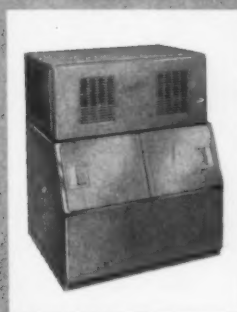


B-300



B-500

World's Newest, Finest Flakers



A-34



A-14



Here's why there never was a better time than *right now* to make the move to Crystal Tips ice makers. Crystal Tips now offers the widest, best line of ice makers in its history. These Crystal Tips ice makers give you the most *advanced design* of any equipment made. Advanced design means you are years ahead in engineering features and styling. Crystal Tips also give you more honest sales features such as: *three* distinct types of ice to meet the needs of every ice user. Crystal Tips also mean lower inventories because *fewer* models satisfy *more* markets. Crystal Tips higher distributor profits mean *more money in the bank for you*. In addition to the finest products, Crystal Tips backs up distributors with one of the largest, hard-hitting advertising and sales-making promotions in the entire ice machine industry.

We want aggressive distributors now. If you're now handling several lines of ice makers, consolidate and concentrate your activity on Crystal Tips. You'll be money ahead. You'll find sales are easier; service much simpler; profits greater. Or, if you are not now handling a line of ice makers, contact us today. We've got news that means more sales and bigger profits for you.

"Crystal Tips" is the registered trade-mark of American Automatic Ice Machine Co.

A Division of McQuay, Inc.

AMERICAN AUTOMATIC ICE MACHINE COMPANY

1779 PARK AVENUE N.W., FARIBAULT, MINNESOTA

PHONE EDison 4-5501

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THE REFRIGERATION & AIRCONDITIONING BUSINESS/SEPTEMBER 1961



**Spark your next sales
meeting with reprints
of the article
everybody's talking
about**

**I tried to buy
AIRCONDITIONING
for a store**

Over 12,000 reprints already sold!



Make sure your organization knows about the poor sales practices of some commercial airconditioning contractor-dealers. This important and revealing field study was presented in the June issue. Because of the great response, reprints are now available to the entire industry at these special prices:

1-9 reprints @ 35¢ each
10-49 reprints @ 30¢ each
50-99 reprints @ 25¢ each
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1000 or more reprints, please request quotation

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The **REFRIGERATION & AIRCONDITIONING**
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BUY FROM YOUR WHOLESALER

CUT ALONG DOTTED LINE

A sign of satisfaction

Year in and year out—time after time, impact after impact—Wolverine Tube, in its national advertising campaigns, uses this important phrase to ask your customers to "BUY FROM YOUR WHOLESALER." To help the cause along, all you have to do is remove this panel from the page, apply some paste or gummed

tape and stick it to your window, bulletin board, trucks, out-going shipments—or wherever you think it will do you the most good. And . . . by stocking and selling the top-quality Wolverine products described on the reverse side of this page you'll be taking another big step toward cementing good customer relations. Try it and see.

BUY AMERICAN

BUY THESE WOLVERINE TUBE PRODUCTS

They're American-made and designed to do a better job for your customers.



WOLVERINE ACR TUBE



Made expressly for refrigeration service engineers. Clean, dry, consistent in temper. Ends are capped with re-usable end seals.



WOLVERINE ROLL-O-TUBE

The round carton that serves as a reel and protects unused tubing against damage. Contains clean, dry tube sealed with a re-usable, plastic end seal.



CUT ALONG DOTTED LINE

WOLVERINE TUBE

DIVISION OF

Calumet & Hecla, Inc.

DEPT. Q, 17228 SOUTHFIELD RD., ALLEN PARK, MICHIGAN

TUBEMANSHIP in Copper—Copper Alloys—Aluminum—Special Metals

PLANTS IN DETROIT, MICH. AND DECATUR, ALA.
SALES OFFICES IN PRINCIPAL CITIES

MAIL THIS COUPON FOR PRODUCT INFORMATION

I'd like complete information about these Wolverine refrigeration products.

- ☐ WOLVERINE ROLL-O-TUBE*
- ☐ WOLVERINE ACR TUBE

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

USEFUL Literature

FLEXIBLE FOAMED PLASTIC PIPE INSULATION. New brochure describes "Ultra-Foam." Included is technical data concerning temperature limitations, thermal efficiencies, vapor barrier and fire ratings, and sizing and packaging data. There are also several application photos, and tables of properties, nominal thickness standards and sleeving sizes, and thickness recommendations. — *Gustin-Bacon Mfg. Co.*
circle 206 on reader service card

SELF-SEALING COUPLINGS. Bulletin 629 discusses basic applications possible with these couplings. Also included are advantages of using the couplings, drawings, and a section on how one coupling can replace two shutoff valves in a hydraulic system. — *Aeroquip Corp.*
circle 207 on reader service card

ELECTROSTATIC AIR POLLUTION PRECIPITATOR. Bulletin 2128 is a question-and-answer session telling how the product solves the problem of air pollution. The release describes the principles of electrostatic operation and offers a 3-color schematic drawing. There are general specs for the line of precipitators, which are outlined and illustrated with cutaway photographic artwork with all major operating components labeled. Also here are descriptions and illustrations covering electronic controls and the high voltage rectifier. — *American-Standard.*
circle 208 on reader service card

AC CAPACITORS. Form C-914 is a combination catalog-service guide on capacitors for ac applications. It gives descriptions and listings of motor-starting electrolytics and Chlorinol-impregnated motor-run capacitors. Also included are useful service and replacement information and an interchangeability chart incorporating capacitors made by Sprague and 11 other manufacturers. — *Sprague Products Co.*
circle 209 on reader service card

AIR DIFFUSER FOR TROFFERS. Catalog CLD-70 contains selection and performance data on a new diffuser to be used with air handling troffers. There's also typical ceiling applications, data on installation, and specifications. Several application drawings and a performance table with one unit per troffer complete the brochure. — *Anemostat Corp. of America.*
circle 210 on reader service card

DEFROSTING TIME CONTROLS. Bulletin 5949 describes time controls for electric heat defrosting and compressor shutdown defrosting. The company's 8200 Series of "D-Frost-O-Matic" controls are outlined in the release that is complete with general specs, mounting dimensions, and suggested wiring diagrams for these two types of defrosting. There's a detailed product photo and special features of the 8200 Series, too. — *Paragon Electric Co.*
circle 211 on reader service card

BTU METER. A new brochure lists the operation and advantages of the "Sweep Balance" Btu meter. The release includes four schematic drawings: two of the meter, one on installation data, and one on an installation layout. Another feature of the brochure is a curve graph on the resistance thermometer in thermal lag by ohms and time in minutes. A 2-page questionnaire for contractors on the meter is given, too. — *Air Conditioning Equipment Corp.*
circle 212 on reader service card

Continued on page 62



1 INSULATION FITS EVERY SIZE PIPE... ANY TYPE FITTING

Mortell NoDrip TAPE



No tools. No vapor-seals, no fasteners, brads or adhesives. Wrap NoDrip Tape spirally around any size pipe, joints, tees, valves, angles . . . and the job's done! NoDrip Tape is a pliable, cork-filled, self-adhering product. Forms a permanent air-tight, 100% vapor- and moisture-proof jacket. Stops condensation drip, sweating, frost. Ends rust and corrosion.



MORTELL NoDrip PLASTIC COATING

. . . For big areas, large pipes, tanks, air ducts. Another fine Mortell refrigeration product. Applies with brush or trowel to metal, concrete, brick, plaster, tile or composition surfaces. Permanently stops condensation, rust, corrosion.

Mortell COMPANY

Makers of Mortite Caulking Cord and Mortite Caulking Gum

Mortell Company

548 Burch St., Kankakee, Ill.

Please send full information about the complete line of Mortell refrigeration products.

I am a Jobber ☐ Dealer ☐ Serviceman ☐

Name _____

Firm _____

Address _____

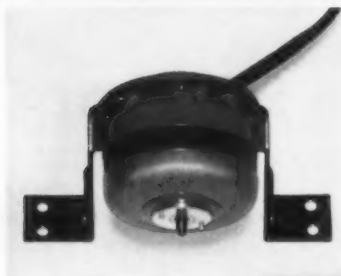
City _____

Zone _____ State _____

circle 51 on reader service card

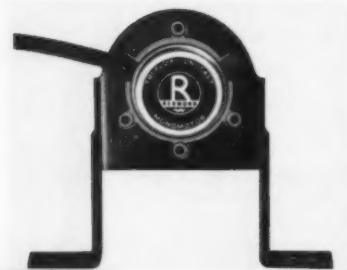
Completely Interchangeable **NEW** Accommodates

**THE NEW TYPE AM MONOMOTOR®
FITS EASILY INTO ALL MOUNTINGS AND BRACKETS**



REAR MOUNTING

$\frac{3}{8}$ ths inch smaller diameter allows motor to fit right into bracket now in unit—no bending, squeezing, pinching.

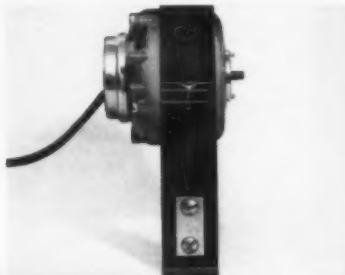


Fits all rear-mounting applications. 6 mounting holes make it easy to mount motor on the bracket.



PERIPHERAL MOUNTING

You can easily replace motors with peripheral mounts or that are lug-mounted.



In a peripheral mount, the AM motor can be adjusted to any depth.

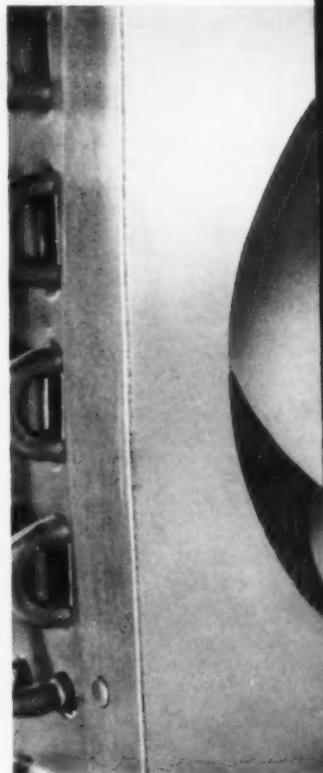


PEDESTAL MOUNTINGS

Pedestal bracket fits right over motor—note number of holes for affixing.



Pedestal bracket attaches easily in any of numerous combinations available.



FREE BROCHURE

Type AM Catalog Page has complete information: dimension diagrams; model numbers; sizes; weights. Send request to Distributors Division, Redmond Company, Inc., Owosso, Michigan.

DISTRIBUTORS DIVISION

Redmond Condenser Fan Motor All Mountings



TYPE AM

These Features Make The New Single Bearing Type AM Your Number 1 Condenser Fan Replacement Motor

As you can see from the photographs at left, now you need to stock only this one motor to accommodate all mountings and brackets—rear, peripheral, and pedestal.

The diameter of the new Type AM MonoMotor® has been reduced $\frac{3}{8}$ ths of an inch, so it fits right into rear-mounting brackets without any bending or knuckle-busting. The smaller size and lighter weight make it easy to handle when you are working on a unit. And of course the fact that it is up to 25% lighter in weight than are competitive motors means real savings in shipping costs for you.

When you install motors that last, you get satisfied customers. Life tests prove that the Type AM has longer life than competitive motors. One of the reasons that the AM gives longer, trouble-free operation is the exclusive Redmond patented oil system, which provides more effective oil recirculation. The new AM has the best oil slingers in the industry. Redmond's patented features guarantee no oil leakage in use or in shipment.

Your customers will like the new AM MonoMotor® because it is whisper-quiet. Extremely close manufacturing tolerances combined with Redmond's patented controlled rotor end play feature eliminate the end play noise problems found in conventional motors.

All-angle operation is another feature of the AM—it is designed for all-position mounting, vertical shaft up, shaft down, or any angle.

Redmond

Company, Inc.

Subsidiary of

COOKSVILLE, ONTARIO •

CONTROLS COMPANY

The Standard of Dependability

OWOSSO, MICHIGAN



OF AMERICA



• ZUG, SWITZERLAND



MODEL 237 CRANKCASE
PRESSURE REGULATING VALVE

the best
**GOOD
WILL**
insurance
you can install...

the surest protection your customers can get

For low-cost overload protection that reflects *quality* in your workmanship and cuts costly "callbacks," make the Model 237 pressure-regulating valve a *must* in every commercial air conditioning system you install or service.

Draining your profits and patience with too many "callbacks"?

Not if you're in the habit of installing AP Model 237 pressure-regulating valves.

There's no chance of motor overload, short-cycling or burnout due to high load conditions. Refrigerant flow is automatically modulated when compressor suction pressures exceed safe levels.

You install the 237 valve quickly in the low side between the evaporator and compressor. Only two simple connections are required. Adjustment? It's a one-hand, one-minute job.

The 237 valve mounts in any position, fits every system. Available in 1½ and 3 T.R.-12 sizes—½" or ⅝" SAE flare or ⅝" to 1⅜" ODF; also long connections for silver soldering. For complete information, see your authorized CC wholesaler.



Creative controls for industry

CONTROLS COMPANY OF AMERICA

HEATING AND AIR CONDITIONING DIVISION

819Z

N. 32nd St., Milwaukee 10, Wisconsin • Cooksville, Ontario • Zug, Switzerland

HAC-4-61R2

circle 22 on reader service card

"PLUS FEATURES HELP SELL THE ALL NEW . . ."



Kodiak

automatic
ICE CUBERS
and automatic
ICE CHIPPERS

"Model CU-200 Cuber"



FOR CHIPS

Model CH 550
550 lbs. daily
"chip harvest"
500 lbs. bin
storage capacity
Model CH 250
250 lbs. daily
"chip harvest"
300 lbs. bin
storage capacity



FOR CUBES

Model CU 200
200 lbs. daily
"cube harvest"
250 lbs. bin
storage capacity
Model CH 400
400 lbs. daily
"cube harvest"
450 lbs. bin
storage capacity

● Produce diamond-bright ice chips and clear, solid cubes — shaped as a cube should be. (Cubes last longer — displace more liquid)

● Store MORE than a full day's ice production, yet take a modest amount of floor space. (You get all the ice you need even at "peak-usage periods").

● Handsome cabinetry is suitable for use in dining or other customer areas. Five non-fading fiberglass colors make it easy to match with existing decor. Rugged yet lightweight fiberglass cabinetry can't rust or corrode — lasts a lifetime. Both interiors and exteriors have contoured corner-less edges.

● Quiet operation and minimum maintenance. Improved and simplified design means fewer operating parts. (Refrigeration components are manufactured by the recognized leaders of the industry). Easy to operate.

● Easy-access front panel completely exposes mechanical compartment and principal components for servicing. Easy to install. Ice maker is installed on top of matching storage bin. Insulating Inert Foam between walls of cabinet locks in sound and temperature. Heavy-duty compressor. Water or air-cooled condenser. F12 refrigerant.

WE INVITE COMPARISON — dollar for dollar and feature for feature. The new Kodiak line is ahead in design — easy to sell, easy to install and easy to maintain. Distributorships in some areas are still available. For complete information without obligation, write:

KODIAK, INC.

Telephone: CA 7-8354

297 COMMERCIAL STREET ST. PAUL 6, MINNESOTA

Kodiak

Clip out and mail today

KODIAK, INC., 297 Commercial Street, St. Paul 6, Minnesota

Please send me complete details about Kodiak.

Name _____

Company _____

City _____

State _____

Type of Business _____

circle 38 on reader service card

RECENT *Installations*

Pumps circulate high density brine

TWO AUTOMATIC frozen stick novelty mix machines, each capable of producing 7200 items an hour, were installed recently for Velda Cooperative Dairies, Miami, Fla.

The machines are used to freeze the mixes to wooden sticks. Each unit requires 250 gpm of calcium chloride at -45F, and the circulated brine weighs 10% lb. per gal. because very low brine temperatures are required. This high density brine solution, combined with a high pressure drop through the piping and cooling system, results in a total head of 45 psi.

Two end suction centrifugal pumps circulate the solution. The pumps, manufactured by Deming Co., are powered by 15-hp, 1750-rpm electric motors.

Freezing tunnel processes meat

A CONTINUOUS product flow refrigeration system that processes meat is built around an 80' long air blast freezing tunnel at Don Smith & Sons Meat Co., Los Angeles. The processing operations start with the transfer of



boneless beef from a tempering freezer to an airconditioned processing room where it's formed. From the forming machines, the meat is conveyed on two 24" sanitary wire mesh conveyor belts through the tunnel.

The trip through the tunnel, at 30 F, takes 4½ minutes. The tunnel itself contains vaneaxial

fans, blast freezing coils, and low pressure receiver. From the tunnel, the meat passes, as needed, to packing or processing machinery to an airconditioned packing room then to a -10 F freezer. Present air circulation permits a 2400-lb. per hour loading capacity. During peak capacity periods freezing takes place at slightly higher temperatures. The system was designed and installed by Kohlenberger Engineering Corp., Fullerton, Calif.

Heat pumps save \$1000 per ton

INDIVIDUAL APARTMENT heat pumps save the Coral Ridge and Atlantic Towers apartments, Fort Lauderdale, Fla., \$1000 per ton over a central system. The General Electric thru-the-wall heat pumps both heat and cool the apartments and provide individual room control. Cost of the heat pumps was about \$200 a ton against \$1200 a ton for central systems.

The individual units also have permanent wall sleeves so the airconditioners can be changed to meet new product developments as they occur during the life of the apartment houses.

The cooling both controls pollen, dust, and humidity and controlling the humidity in the apartments gives the owners more freedom in choosing fabrics that will hold their color and fiber construction.

Modern church uses rooftop ducts

ALL DUCTWORK was installed on the roof of the First Baptist Church, Sebring, Fla., to keep the glass and aluminum building's ultra-modern design. The church has poured concrete floors and roof, and an aluminum and glass veil breaks the sun into many patterns yet lets in winter sun while excluding hot summer light.

A Westinghouse packaged 50-ton cooling unit was mounted in the church's airconditioning system with the fan section side-mounted. The self-contained plant has a 6-row evaporator coil with a cleanable condenser.

Air enters the building through ceiling diffusers and motorized dampers provide cooled air to either the sanctuary or educational building as needed.

Continued on page 58



HOW DO YOU JUDGE A DRIER ?

BY PERFORMANCE OR BY BASELESS STATISTICS ?

The way some manufacturers talk about filter area you'd think that the bigger the block of desiccant the better job it does. Poppycock! The simple scientific fact is that filter area has very little to do with *filter capacity*...and drying efficiency. The new Ansul "System Boss" drier offers far and away more filter capacity in less space than any other drier.

Another thing...why build a drier that's as fragile as a china tea cup? Most driers *do* get banged around, dropped and abused in shipping and handling. Drop an ordinary drier with a bloc-type desiccant on the concrete and you've got a basket case—waste basket, that is! Drop a "System Boss" and the worst thing that happens is a small dent. There's no core to break or come loose... "Andrite" pelletized desiccant is held securely under rigid spring pressure. Metal flare protectors...2500 psi bursting strength...rugged construction...the Ansul "System Boss" is the best drier ever built and the best value.

See it, drop it, install it...and learn how much abuse (and how much dirt and moisture) a real drier can take. It's handled by better refrigeration wholesalers everywhere.

ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN

circle 13 on reader service card



Which truck has

The one on the left. The half-ton.
This load is just about 4 crates too much for its 6-foot bed.

But the one on the right will take it The Volkswagen.

It's funny. The VW is 3 feet shorter than a half-ton, yet its bed is 2½ feet

longer. 8½ feet in all. And it's completely flat. No wheel well.

(And it holds 1,764 lbs.—only 240 lbs. less than a full ton.)

You load the Volkswagen like a flat-bed. The sides drop all around. Like 3 tailgates.

And at night you can put tools in the Volkswagen's weather-tight locker. It's 5 feet wide and almost 4 feet long. And it locks.

If it rains, you can even put up hoops and a fitted tarp. These are extra. \$85.*
(The truck itself is only \$1,885.†)



© 1961 VOLKSWAGEN OF AMERICA, INC. *SUGGESTED RETAIL PRICE. †SUGGESTED RETAIL PRICE, EAST COAST P.O.E.; WEST COAST \$1,995.

to make 2 trips?

You know the rest of the VW story. Our rear engine adds weight to your drive wheels for extra traction in snow. And the VW engine is air-cooled. No water to boil over or freeze up. No anti-freeze.

J. C. Pressly & Company of St. Peters-

burg, Florida, averaged 3.5¢ a mile for gas, oil, tires, repairs, license and insurance on VWs for their heating and cooling business. (And their driving is mostly stop-and-go in town with no open highway use at all.)

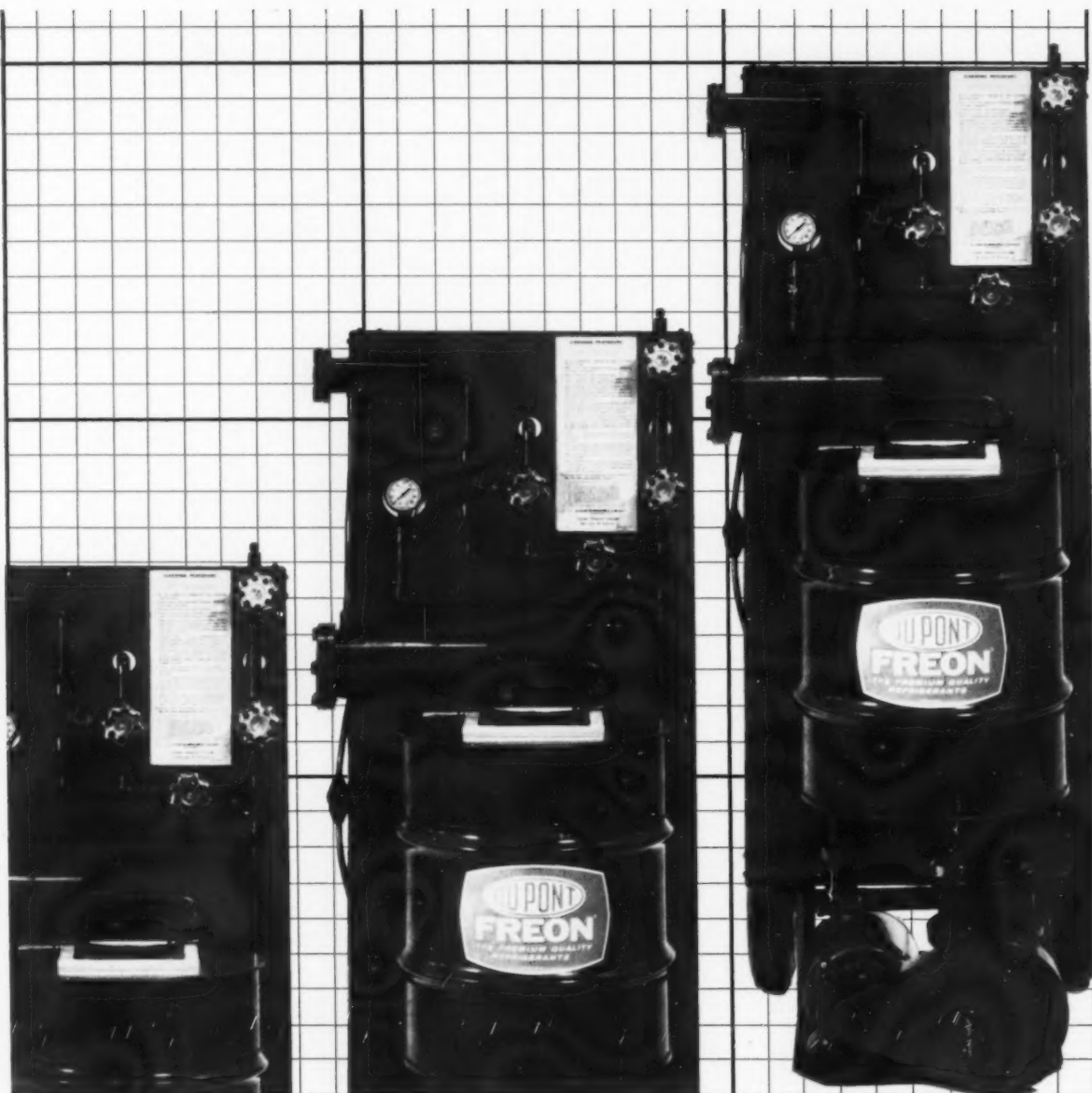
Our drop sides make Pressly's duct-

work easy to load and our long bed takes fans and motors that would take an extra trip with standard half-tons.



Are you using a half-ton now? You could pile more in a VW and save a trip or two. And a buck or two.

circle 74 on reader service card



RAISE PROFITS

with this new Du Pont power-cleaning unit for burnouts

Call-backs on refrigeration burnout jobs can run up costly hours of non-profit service time. Now, however, you can help eliminate costly call-backs by doing a thorough cleaning job the first time—with a new power-cleaning unit designed by Du Pont. This new unit does the job not by replacement or simple flushing, but by thorough recirculation. It uses Freon-11*, the most effective selective solvent available for oil, sludge, or grease.

Complete burnout cleanup can be accomplished quickly and efficiently in just eight short steps with this practical, mobile unit. And when you recharge the sys-

tem, you'll find Du Pont's improved lightweight "Zephyr" cylinders make that job a whole lot easier, too.

To increase your profits and improve your reputation for dependable service, use this cleaning unit for burnout jobs. Ask the helpful air conditioning and refrigeration wholesaler near you who sells "Freon" for all details.

FREON® premium quality
REFRIGERANTS



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

*FREON and F- followed by numerals are Du Pont's registered trademarks for its fluorocarbon compounds.

circle 24 on reader service card

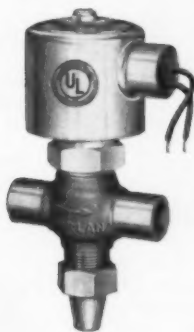
**SPORLAN
SOLENOID
VALVES**

are an

OPEN and CLOSED case...

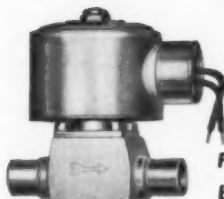
**of outright Peak Performance — for all
refrigeration and air conditioning applications**

You be the judge... Sporlan solenoid valves are the best buy because of their high MOPD rating, the same valve type can be used on either Refrigerant 12 or 22 systems . . . Extremely simple in design with few internal parts . . . Sturdy construction . . . Tight closing through use of synthetic seating material . . . Three sizes of high quality, power packed, layer wound, moisture-proof coils actuate the complete line.



When Sporlan Products are used exclusively, the evidence is conclusive.

There are Sporlan solenoid valves for the flow control of refrigerants, water and steam.



***For complete presentation of the facts write for your copy of
Bulletin 30-10 today.***

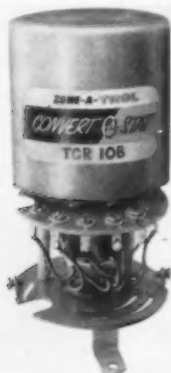
SPORLAN VALVE COMPANY
7525 SUSSEX AVENUE ST. LOUIS 17, MISSOURI
TV

EXPORT DEPT. 85 BROAD ST., NEW YORK 4, N. Y.
circle 65 on reader service card

Product DATA

Zone control thermostat

"Zone-A-Trol Convert-O-Stat" thermostat that permits existing 2-wire thermostat to be used in modernization of existing warm air heat or cooling system to provide heating and cooling zone control. Eliminates defacing or marring of walls when changeover from older



thermostats of larger or different size or shape. Converts any existing 2-wire or 3-wire Series 10 stat to 3-wire single pole double throw circuit needed to control modern low voltage zone controls for year-round control. — *Econo Products Co. Div., Viking Instruments, Inc.*

circle 136 on reader service card

Air isolation curtain

"Miniveil" air curtain that allows cold storage room doors to remain open for long periods with only small rise in coldroom temperature. Unit eliminates cold air escape and prevents warm air entrance by directing stream of air over doorway face. This entraps air in immediate vicinity. Warm air blown or carried by convection currents trapped by air stream and unable to enter cold storage area. Made of aluminum, is lightweight and resists corrosion. The 6' model weighs 80 lb., will accommodate fan at either end, and operates on 110 or 220 v. ac. Air current adjustable by nozzle louvers. — *Dyfoam Corp.*

circle 137 on reader service card

Unit cooler

A 3-fan "Top-Aire" unit cooler which adds fourth size of 3000 Btuh capacity at 10 t.d. to three other sizes in series. Is flat and only 4 1/2" thin, mounts on top of refrigerator, and can be used back of bars and under counter cabinets. Aluminum drain fitting angled at 45 degrees so can be run through back or bottom of cabinet. There's room for an expansion valve inside. Also has life-

lubricated, impedance-protected motor and grained aluminum cabinet. — *Danville Div., Bohn Aluminum & Brass Corp.*

circle 138 on reader service card

Airconditioning coil case

For horizontal furnaces which will accept same V-coil used on upflow and downflow forced-air furnaces. Case shipped knocked down. For horizontal furnaces is 48/60 DNH for 48,000 and 60,000 Btu. capacity VC coils. — *Day & Night Mfg. Co.*

circle 139 on reader service card

Airconditioning preheater

Steam or hot water preheater section for close temperature control, no stratification, and freezeup protection of air-conditioning systems. Tubes individually and readily replaceable and unit can be used as heater in fresh air supply and other systems with no preheat unit. Utilizes integral face and bypass damper system. Steam pressure or hot water flow constant despite inlet air temperature variations so no trapping or freezeup because of throttling of heating medium.



Discharge temperature can be held to within 1 degree and temperature rise can be as low as 5 F with maximum temperature rise of 350 F. Return-bend tubes keep temperatures uniform across coil width of sections. In 11 sizes for installation in ducts from 3 to 48 sq. ft. in cross-sectional area, may be installed singly or in multiple arrangements. Minimum steam pressure 5 psig; maximum is 200 psig. — *L. J. Wing Mfg. Co.*

circle 140 on reader service card

Gas-fired unit heater

Has special "Resistal" heat exchanger. Capacities from 25,000 to 225,000 Btuh input. Aluminized steel heat exchanger

will withstand higher temperatures without scaling or discoloring more than usual. Resists atmospheric corrosion. Heaters shipped assembled with controls prewired and drilled cast iron burners in place. Smallest unit only 21-5/16 x 15 x 17 1/2"; largest, 43 3/4 x 33 x 36-1/16". — *Mueller Climatrol Div., Worthington Corp.*

circle 141 on reader service card

Heat pump

Self-contained air-cooled heat pump is Model 3THP-1. Remote air-cooled fan condensing units are Models 2TCL and 3TCL. Three-ton heat pump model has 6-kw strip heater that automatically energizes when unit enters defrost cycle. Has heavy-duty compressor that operates at 130 F ambient; a propeller condenser fan; double drain pan; hermetically sealed system; refrigerant circuit protection. Condensing unit has cooling coil that fits on top of furnace and connected to refrigeration unit with small copper tubing. System factory cleaned, dehydrated, precharged with R-22. Has breakaway valves to connect system in field and in 2 and 3 hp models. — *Caffers & Sattler.*

circle 142 on reader service card

Stud driver

"Control-A-Stud" stud driver ("Fixrammer" Model) transmits power directly to plunger which moves at relatively slow speed, thus pushing stud into material. Stud stops when plunger stops pushing. If stud not penetrated to proper depth, may be reclaimed by pushing it farther with another charge. Gas control chamber eliminates powder marks so may be used on finished surfaces. Can be used



to drive studs into concrete, steel, cinder blocks, or masonry. Automatic control system regulates depth of penetration and stops stud from coming out opposite side. Uses threaded and nail studs in 1/4, 5/16, and 3/8" sizes and single strength C-3 charge for all fastenings.

Continued on page 32

End Sight,
Sound
and
Water Problems
with
LARKIN
ZEPHYRCON
Vertical ↑ Discharge
Air-Cooled
Condensers



Capacities from 5 to 60 tons—low silhouette models

OUTSTANDING FEATURES

- Patented LARKIN cross-fin coil—aluminum fins bonded to staggered copper tubes.
- Circuiting designed for counter-flow operation.
- Low-speed fans, dynamically balanced, assure top efficiency, quiet operation.
- Each fan has two matched v-belts.
- Fan shaft mounted in ball bearing pillow blocks—permanently lubricated and sealed.
- Heavy-duty motors, drip-proof, NEMA frame, ball bearing, mounted securely on adjustable base within unit housing, protected from weather.
- Removable service door—easy access to motor and belts.
- Metal prepared through five-stage Oakite Crysoat phosphating process.
- Primed with epoxy resin; finished with thermo-setting, plastic-base enamel—a triazine resin. Long-lasting, water-and-alkali-resistant.
- Safety-spiral wire guard heavily zinc-plated and Iridite-dipped for maximum corrosion resistance.
- Multiple circuiting available when specified.

Vertical air discharge LARKIN Zephyrcons, BFC-V Models, can be located anywhere regardless of prevailing winds. Noise is kept to a minimum because air discharge is skyward. Low silhouette does not detract from the general appearance of a building.

Heavy eye-bolts on all units facilitate lifting.

These units are built to take severe punishment from the elements in all climate conditions. Basic design LARKIN Zephyrcon air-cooled condensers have proved successful in thousands of installations throughout the world.



Write for Bulletin BFC 61,
or see your wholesaler



circle 43 on reader service card

Product DATA

Continued from page 30

After firing, shell automatically ejected as tool opened. No breech plug involved. — *Sileps, Inc.*

circle 143 on reader service card

Load lifter

"Hi-Jack" load lifter that can lift loads of 500 lb. up to 15' high at speed

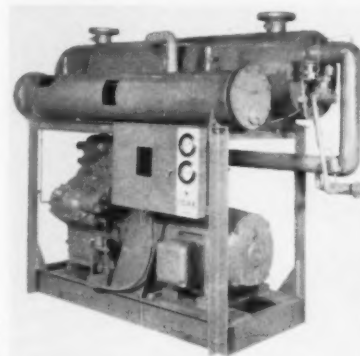
of 3 fpm. Can also serve as lift truck when equipped with wheels or casters. May be fitted with ceiling stabilizer or with wall stabilizer to increase load-carrying capacity. To get extra stability, 1½" pipes may be inserted in base tubing and allowed to project out beyond it to widen base support. — *Vermette Machine Co., Inc.*

circle 144 on reader service card

Packaged liquid chiller

Packaged liquid chiller (3DD Series) of direct expansion type in 50, 60, 75, 100, and 125 ton sizes. Available with device that permits continuous stable operation even when load 10% of peak

capacity. Shipped fully wired, piped, and tested. No floor bolting necessary and equipped with vibration isolator

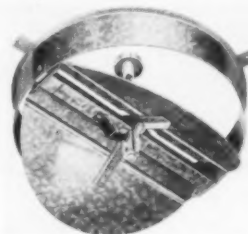


floor mounts, needing only a level surface. Models also available without condenser for remote water- or air-cooled condensing. — *York Div., Borg-Warner Corp.*

circle 145 on reader service card

Ceiling diffuser damper

Galvanized steel ceiling diffuser damper and installation ring. Were cold-rolled previously. New construction improves resistance to rust and corrosion. Absence of paint around operator mech-



anism assures smooth opening and closing action and damper operated by screw nylon rack and pinion device. Backlash tolerances tight to prevent blade flutter under high velocities. Adjustable stop on damper eases balance of system at diffuser face. — *Air Control Products, Inc.*

circle 146 on reader service card

Air-sealing rubber doors

Flexible self-closing auxiliary rubber doors have clearance space at top and sides closed with 1/16" rubber air seals for use in refrigerated areas. Doors of duck-reinforced rubber with heavy duty frame and hardware. Have self-returning cam hinge and auxiliary closing devices. Choice of ½" dia. wire double-acting adjustable compression springs or 5/16" dia. wire single-acting torsion springs. Eye-level 14 x 7½ x ½" standard windows are shatterproof. Magnet closure, wide angle hinges, hold open device, striker plates, choice of finish on metal parts all optional. — *W. B. McGuire Co., Inc.*

circle 147 on reader service card

Continued on page 71

actually DESTROYS water!

...the *Genie* in your bottle of

THAWZONE®

...a little moisture in the refrigerant, plus heat, forms destructive acids, which eat at insulation, cause burn-outs, develop clogging sludge.

That's one of the reasons Thawzone is the choice of service men to cure and prevent troubles in refrigeration and air conditioning systems. It contains a chemical genie that speedily destroys every trace of moisture, and prevents its return. Thawzone stops acid formation—eliminates freeze-ups—minimizes corrosion and copper plating—helps keep expansion valves and

other parts rust-free, sludge-free—scavenges out oxygen.

Take Thawzone on every job... use it in every installation charged with the fluorine refrigerants (Freon,* Genetron,* etc.), or with isobutane, methyle chloride or methylene chloride.

Economical! Just ½ oz., treats a pound of refrigerant. Ask your supplier for Thawzone and free Thawzone Service manual.

*Reg. trademarks: DuPont & Allied Chemical.

TWO OTHER TAKE-ALONG TROUBLE SAVERS

TRACE
— the simple, fast way to pinpoint refrigerant leaks... a positive leak tag.

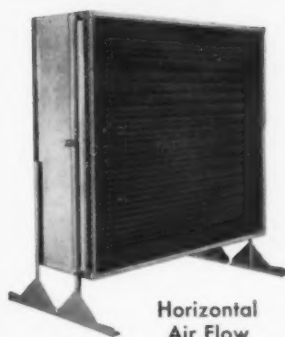
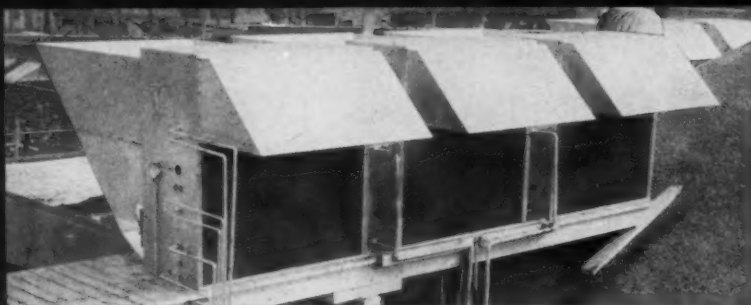
Leak Lock
— the joint sealer engineered for refrigeration use.

HIGHSIDE CHEMICALS INCORPORATED
COLFAX AVENUE • CLIFTON, NEW JERSEY
circle 35 on reader service card



BOHN

AIR COOLED
CONDENSERS
END WATER PROBLEMS!



Horizontal
Air Flow



Vertical
Air Flow

**BOHN AIR COOLED CONDENSERS
ARE AVAILABLE IN
2 THROUGH 60-TON SIZES.**

Sacramento Supermarket Saves \$200 a Month in Water and Sewerage Bills Alone!

Water in Sacramento, California is hard and it's costly! Arata Brothers Supermarket solved this problem by changing from water cooled condensers to 7 Bohn Air Cooled Condensers. The result was lower maintenance and lower operating costs ... with savings of \$200 monthly on sewerage and water bills alone. More importantly, the Bohn Air Cooled Condensers maintain even temperatures in the store's refrigerated equipment *at all times of the year!* Even a high temperature of 114° recorded in 1959 was easily handled by the Bohn Air Cooled Condensers! Whether it's hot or cold, Bohn controls adjust automatically to seasonal weather changes and maintain proper head pressure at all times.

For low first cost...low operating and maintenance costs, the answer is Bohn Air Cooled Condensers... available in horizontal models (deflectors optional) and in low-silhouette vertical models.

BOHN

Buy the known line... the **BOHN** line
ALUMINUM & BRASS CORPORATION
Danville Division • Danville, Illinois

circle 18 on reader service card



**In dampening piping vibration,
Anaconda Vibration Eliminators deliver**

TWICE THE LIFE

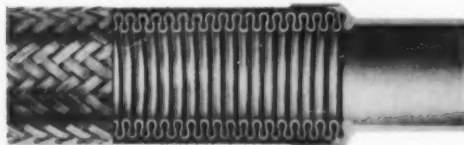
TWICE THE LIFE

of the nearest competitive VE's . . . and over 5, 6, even 8 times the service life of other brands. *Proved* by vibratory fatigue testing in Anaconda Laboratories!

Strict quality control testing uncovered the superiority of Anaconda VE's. The next best make failed in half the time on the fatigue testing machine. Add up the savings in downtime . . . in maintenance costs. You just can't afford any other brand!

Anaconda Vibration Eliminators—recognized by Underwriters' Laboratories, Inc. under File SA 2585—are sold by leading air conditioning and refrigeration wholesale distributors everywhere. For engineering information, write: Anaconda Metal Hose, P.O. Box 791, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

61-949



Anaconda VE, the only connector with a flexible core of seamless tin bronze and special high-tensile bronze wire braiding for longest service dampening vibration in piping.

**ANACONDA® VIBRATION
E_S LIMINATORS**

circle 11 on reader service card

ANSWERS TO COMMON WATER TREATMENT PROBLEMS

Water obtained from natural sources is not really pure. It contains foreign matter in varying forms and amounts. This may be present as suspended solids or solids and gases in solution. The conventional dividing line between soft and hard water is 200 ppm (parts per million) of these impurities—the higher the ppm, the harder the water.

It is these substances that cause scale buildup. In cooling with water, evaporation takes place, causing increasingly higher concentration of the impurities. Eventually the solid matter drops out as a sludge or deposits on the metal surfaces, forming scale.

How to identify problem scales

Prepare a dilute solution of solid or liquid scale remover in a glass jar or bottle (1 tsp. of solid scale remover per ½ pt.—1 tbsp. per ½ pt. of liquid). Chip small pieces of scale from the unit, drop them in the solution and observe the action.

Magnesium or Calcium Carbonate Scale

Usually of light color. Will bubble vigorously in the solution.

Iron Scale

Usually a brown or reddish color. Bubbles slightly or not at all. Turns solution to a yellowish color.

Oily Scale

Can be any color. Little visible action in solution, but an oily ring may appear on solution surface.

Sulfate and Silica Scale

Can be any color. Usually are extra hard and flinty. Little or no bubbling in solution. Scale of high silica content may have a glossy surface.

HOW TO REMOVE THEM

Magnesium or Calcium Carbonate Scale

Can be easily removed with either liquid or solid scale remover.

Iron Scale

Requires liquid scale remover. Use 4 gal. per 15 gal. of sump water. Stop fan to let water temperature rise to 100-110°F but not over 120°F. Clean at this temperature for best results. About 4 hr. needed.

Oily Scale

First add 1 box of Dash detergent per 100 gal. of system water. Run 15-20 min. Be sure foaming is not excessive. Leave the Dash in the solution and add recommended dosage of solid (5 lb. per 10 gal. of water) or liquid (1 gal. per 15 gal. of water) scale remover.

Sulfate Scale

Add 1 lb. of baking soda per gallon of sump water. Circulate for 8-12 hr. Then drain, rinse and refill system. Add liquid scale remover—4 gal. per 15 gal. of water. Circulate 2-4 hr., using test papers regularly to check cleaning strength.

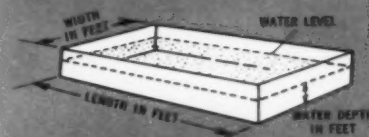
NOTE: If any of these treatments fails, a second attempt should be made. A second failure would indicate the scale can be removed only by harsh chemical treatment or mechanical means.



**How to
retard
scale**

"Virginia" Scale & Corrosion Inhibitor. Glassy polyphosphate crystals provide slow, controlled solubility. No mechanical feeding devices are needed. Inhibitor holds scale-forming solids in suspension or solution. Deposits thin protective film on metal to stop oxidation. Has neutralizing effect on weak acids.

HOW TO CALCULATE AMOUNT OF WATER IN A SYSTEM

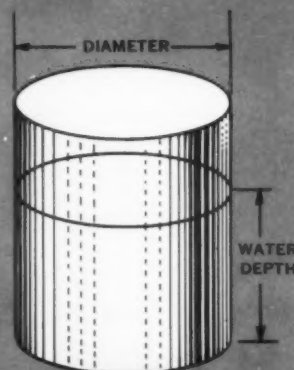


RECTANGULAR TANK OR SUMP

Measure (in feet) the length, width and water depth. Then length x width x water depth x 7.5 equals gallons of water.

EXAMPLE: If sump is 5 ft. long, 4 ft. wide, and water is .5 ft. deep, the calculation is as follows:

$$5 \times 4 \times .5 \times 7.5 = 75 \text{ gal.}$$



ROUND TANK

Measure diameter of tank and depth of water in feet. Then diameter squared x water depth x 6 equals gallons of water.

EXAMPLE: Tank has diameter of 3 ft. and water is 3 ft. deep.

$$9 \times 3 \times 6 = 162 \text{ gal.}$$

FOR TROUBLE-FREE
MAINTENANCE USE

"VIRGINIA" REFRIGERATION PRODUCTS



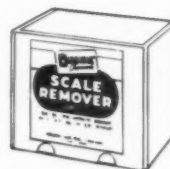
"Virginia" Scale & Corrosion Inhibitor

Reduces scale buildup sharply, keeping scale-forming solids in suspension or solution. Less scale, less labor, lower maintenance costs.



"Virginia" Liquid Scale Remover

Ideal for heavy scale. Dissolves 3 lb. of scale per gal. Works fast. Inhibited to prevent metal damage. (Anti-foam agent and test papers included with every container.) Light shatterproof throwaway container for easy handling and easy pouring.



"Virginia" Solid Scale Remover

Highly inhibited—safe for use on galvanized, dipped zinc and aluminum water-cooled equipment. Destroys algal growth. Contains 96% sulfamic acid.



"Virginia" Algae-Cides

Adaptable to the special use requirements in (1) towers, (2) evaps, (3) air washers, and (4) ice machines and drip pans. A new No. 4 high-potency formula kills the tough resistant types of algae.



"Virginia" Ice Machine Cleaner

Eliminates slow freezing, bad taste and odor. Will not injure enamel or polished metal surfaces. Highly effective on automatic cube or flake ice machines.



Du Pont FREON® Refrigerants

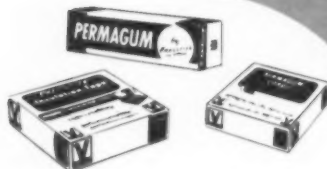
Nonflammable, nontoxic, stable, odorless. Best known for premium quality. Most widely used refrigerants in the industry. "Virginia" is the only national sales agent for Du Pont "Freon". F-11,* F-12,* F-13,* F-22,* F-113* and F-114* are available in cylinders of all popular sizes.

*Du Pont registered trade mark



VascoCel Insulation

Preformed of soft, durable, clean, odorless Neoprene. Cuts time and labor costs sharply. Closed-cell structure makes condensation impossible. Ozone, oil, acid, and fungus resistant. Application temperature range 0-220°F. Available in 3/8", 1/2" and 3/4" wall thickness.



Permagum Insulation

Tape—ideal for stopping pipe drip. Adheres to any dry surface. Permagum slugs—seals seams, copper tube, BX and conduit entries against moisture. Cords—nonstaining, odorless, shaped for use on display cases, freezers, room coolers, etc.



"Virginia" Degreasing Solvent

No. 10 has low toxicity, is noncorrosive and fast drying. High flashpoint of 154-160°F reduces fire hazard; dielectric strength 20,000 volts.

Ask about "Virginia" "Freon 11" Cleaning Solvent for motor burnouts.



"Suniso" Refrigeration Oils

G Oils are improved for greater stability and lower waxing point. Available in 3G-150 SSU, 4G-300 SSU, and 5G-500 SSU. Dual Inhibited oils have same low wax point, resist breakdown and copper-plating even more effectively.



Can-O-Gas® Packaged Refrigerants

Throwaway cans—full line in screw-top or clip-top cans. Wide variety of pre-weighed charges, accurate to ± 4 grams. Selection of Freon® gases, sulfur dioxide, and methyl chloride.

Carried by wholesalers everywhere. Order from one nearest you or contact Refrigeration Division, VIRGINIA SMELTING COMPANY, West Norfolk, Va. Available in Canada and many other countries.

"Virginia" is the only national sales agent and authorized repacker for Du Pont's "Freon" Refrigerants.

LET'S TALK *Business*

Start planning now for 1962

IF you are satisfied with your profit, your organization, your product lines; if you have no accounts receivable or service problems; you can relax. Make those plans for a winter vacation in Bermuda right now!

But, if you are like most of the installing contractor-dealers in this industry and know there is room for much improvement in your business, now is the time to forget about vacations and start planning for 1962.

Your monthly financial statement is the key to your standing. It's an excellent guide to follow.

If your decisions the past eight months have been correct, it will be reflected in your profit-and-loss figures. If you **believe** your decisions have been correct, but your statement doesn't reflect this, you better get professional counsel. And you can get it free.

Your local banker will welcome the chance to talk over your situation. If you want a completely new viewpoint, go to a bank where you are unknown. Apply for a loan simply on the strength of your financial statement. You may not like the answer you get, but it will help you plan ahead.

Another excellent source of free counsel is the credit department of any of your major suppliers.

After talking with all of these people, you should have a pretty good idea how you stand.

If your **capital** is tied up in inventory, concentrate on moving it by starting incentive programs or assigning quotas to your salesmen.

If **receivables** are too high or slow to come in, get yourself professional help. It's well worth the money.

If **call-backs** are way out of line, find out why. Maybe your servicemen need more training or you need some new, and better, lines of equipment.

You undoubtedly know what your direct costs are, but do you know that your indirect costs are nearly the same? If you are having trouble figuring these costs, refer to page 42 of our August issue.

There's an old sales adage that says, "Plan your work and work your plan." The important thing is to start now. Plan to include "Profit, too, in '62."

Jack Robinson

Product Quality — is it

L. L. GRANT, *president, Hill York Associated Service Companies*

BUSINESS BACKGROUND:

Since 1953, president of Hill York Associated Service Companies, a group of four corporations in the Miami, Fla., area engaged in the service contracting business. Since 1960, treasurer of Hill York Corp., York distributor in southern Florida. Entered industry in 1936 as a serviceman. Worked first for others and later for himself at various locations in northern Florida. Joined Hill York organization in 1937 as service manager.

ASSOCIATION ACTIVITIES:

President, Air Conditioning, Refrigeration and Heating Contractors Association of Florida, 1961. Active for many years in this group, which is the southern Florida chapter of Refrigeration and Air Conditioning Contractors Association (National).



I LIKE TO LOOK AT THE SUBJECT of product quality in reverse — quality product — because then there is no mistaking the meaning. And quality product, whether in the equipment we install or the service we render, is the thing that makes being a part of this industry worthwhile to me.

I think the basic problem facing us as an industry is that we haven't yet built a product good enough. We should concentrate on seeing how well we can build a product, not how cheaply we can build it. I'm in contact with the buying public every day, and despite all the talk about price cutting I'm convinced that most customers still want a quality product and are willing to pay for it. Most of them will consider quality first and price second, providing you convince them that they're getting their money's worth.

A quality product properly applied and correctly installed will result in profit and pride for both the manufacturer and the installing contractor. The happy and satisfied customer who buys it will become the best advertisement and source of new business that either manufacturer or contractor could ask for.

A poor product, poorly applied can result in disaster. And even a good product that is misapplied and improperly installed can cause plenty of grief. So this problem of quality rests evenly upon both the manufacturer and the contractor.

I think the manufacturer must take the initiative in the effort to upgrade product quality. I think this trend is already under way, and all we need to do is build a fire under it. If we don't do this, then we're all heading for real trouble, because the public is demanding a better product and the public deserves it.

What, then, is the solution to this problem of product quality? I suggest these three steps:

1. We at the contractor-dealer level must stop trying to take the easy way out. We must start taking pride in our work by spending our efforts in selling a quality job rather than in paring the price. We must start demanding better products from manufacturers so we can do this

2. The distributor must do a better job of selecting dealers that are qualified to properly apply and install the product, and that have the right attitude toward the buying public. Once he gets such dealers he must keep them qualified through continuing training programs.

3. The manufacturer must choose his distributors with the same care, and stop settling for some inexperienced outlets with no other qualifications than having enough money to buy the products that the manufacturer wants to unload.

There's a revolution taking place in our industry. The manufacturers, distributors and contractor-dealers who survive it will be the ones who have a quality product and who handle it in quality fashion all the way from the drawing board to the user.

your responsibility?

T. HANCOCK, executive vice president, The Trane Co.



IN OUR OPINION, most airconditioning systems being installed in this country presently are of good quality. However, this industry is under strong pressure to reduce prices all along the line — in system design, field installation and equipment manufacture.

The competition that produces this price condition is essentially good because it spurs technological advances that produce better products at less cost. But there is danger that such strong pressure to reduce prices could result in lowered quality of systems by reduction of safety factors, use of equipment of marginal performance, and adoption of practices in the field that are cheap rather than economical.

Quality airconditioning systems are, in reality, low cost airconditioning systems. Attempts to reduce initial cost at the sacrifice of quality and reliability will result in higher costs to the building owner, the installer, the system designer, and the manufacturer.

It is basic, therefore, that the industry must resist reducing quality to reduce costs regardless of strong pressures for lower prices.

Everyone in the industry plays an important role in maintaining quality of airconditioning systems — the consulting engineer, architect, installing contractor, and manufacturer.

One of the fundamental ways the manufacturer contributes is by the manner in which his complete and extensive facilities for research, testing and design are utilized. Some professional and trade associations finance and conduct important research work, but the manufacturer has a heavy responsibility and plays an important role in research work for the industry. He can and should pass on to the professional and contracting groups the benefits of that research work.

The responsible manufacturer realizes that he should provide a constant flow of information on improved products, system design, equipment selection and installation techniques. To ensure most effective use of this knowledge, he channels it through a field organization of fully trained graduate engineers functioning as sales representatives.

The manufacturer also contributes to high quality standards by organizing equipment rating and testing procedures through industry associations. The codes that result from such efforts bind participating manufacturers to test and rate their equipment scientifically, and accurately publish those ratings in their literature. This provides a guide for evaluating the reliability of manufacturers and their products.

Maintenance of high quality standards requires the vigilance and cooperation of many persons. A well designed system with a complete set of plans and specifications starts the chain of events. Installing contractors who are determined to buy quality products and follow proper installation techniques are the next vital link. Manufacturers who are determined to adhere to high quality standards in design and production, and whose research activities contribute to the industry as a whole, complete the chain.

BUSINESS BACKGROUND:

Executive vice president and director of Trane, at the company's La Crosse, Wis., headquarters, since 1955. Joined the Trane organization in 1934. Became sales manager in 1946, and vice president of sales in 1950.

INDUSTRY ACTIVITIES:

Director, Air-Conditioning and Refrigeration Institute.

What readers
say about

PRODUCT QUALITY

PROJECT UPGRADE is a forum in which all elements of the industry have a chance to voice their opinions on important and controversial subjects.

To get the reaction of some of our readers, we sent our editors out --- camera in hand --- to talk to them.

This is what they heard:

George L. Johnston

*president,
George L. Johnston Co.,
distributor,
Detroit, Mich.*



"The problem of product quality depends just as much on proper application and installation as it does on proper design and manufacturing. So the consultant and the installer have to share the responsibility.

"A good product improperly applied and installed will make the customer just as unhappy as a poor product properly applied and installed. The end result is the same in either case — the customer doesn't get his money's worth.

"It's up to the consulting engineer who lays out a system and the contractor who installs it to make sure they are up-to-the-minute on the manufacturer's product instructions, and to be equally sure that they follow these instructions.

"As a product distributor, we found that many of these people simply didn't read much of the manufacturer's literature that we mailed out to them. So now we have our salesmen take it around personally to our key accounts and actually insert it in their application or installation manuals. Then we at least know that they have the information, and that there's a better chance of their reading it when they have occasion to refer to it."

John T. Dorfler
*construction and
service manager,
Elliott-Lewis Corp.,
installing contractor,
Philadelphia, Pa.*



"Every contractor wants the most he can get in product performance for the least amount of money. But he has to recognize the point at which loss of repeat sales and mounting service costs will offset

any initial price advantage. And he has to draw the line right there.

"There is another dividing line, too. It is that point at which a manufacturer's over-refinement of his product makes field maintenance and service so difficult that the average serviceman can't do the job properly.

"Manufacturers often reduce the size of the equipment, then turn around and add various protective devices because the equipment is over-extended in application. Ultimately this costs us more in field labor for our committed warranty period. So the equipment may cost us less initially, but more in the long run.

"Too, some manufacturers tend to reduce costs by making changes in their products; for example, by using a cheaper, maybe imported, valve plate. This very change will make a very good line of compressors a very poor line. A manufacturer who does something like this loses a lot in friends, money, and reputation because the compressor's incidence of failure mounts out of all proportion to the cost reduction.

"I find it amazing that manufacturers make products that aren't as inflated in price as in other fields. In fact, I'd say that it's cheaper now, by horsepower or tonnage, than the same equipment was 10 years ago.

"Nevertheless, the manufacturer who reduces his price at the expense of increased field service costs to the contractor does his wholesaler, the contractor, and the consumer all a great disservice."



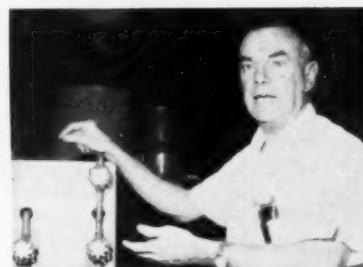
James Cole
branch manager,
Medford-Dunleavy, Inc.,
installing contractor,
Acandale, Pa.

"As far as I'm concerned, product quality includes product service, too. The manufacturer should take service complaints more seriously than they seem to do — and should acknowledge them. Here's a perfect example. I wrote a letter with several complaints and recommendations to a large manufacturer of condensing units. That was eight months ago! And do you know, to this day he hasn't even told me he got the recommendations, let alone thank me for them.

"Poor quality hurts us in service. By this I mean repeat nuisance calls on the same equipment time after time. This costs us a lot of money, and our customers, too, if their warranty has expired. It's costing the manufacturers, as well, because we sure won't continue to buy products from a factory that keeps giving us trouble.

"Some of our specific recent complaints with poor product quality are those such as paint that doesn't stand up or look decent after a few months, and specifications that aren't true; for example, the other day we got some specs that called for a $\frac{1}{2}$ " liquid line discharging from the lefthand side whereas on the unit it was $\frac{1}{2}$ " from the right side. This is inexcusable.

"Here's a message you can give manufacturers from us: We'll give you one chance to take us to the cleaners on a lousy piece of equipment. But it will be the last time! And I'm sure most contractors feel this way, too. At least I hope so, for this is the only way we can combat shoddy production methods and the lack of product quality."



William J. Boyd
general manager,
United
Refrigeration, Inc.,
wholesaler,
Philadelphia, Pa.

"Product quality? I'll tell you what it means to us. We stock materials that through our experience we know will help us help our customers install a better job, with installation and service problems cut to the bone.

"We make sure of this because from time to time we analyze the installations using our products. We stock only those products which haven't given us consistent trouble. And we promote them to our customers. In effect, we screen products for our customers so the poor quality product doesn't flood the market and us with lousy service.

"Cheapness and poor quality go hand in hand. It all comes down to getting what you pay for.

"Take a cooling tower for example. We recommend Brand A. Say one of our customers tell us, 'I can get Brand B cheaper. Why should I buy Brand A from you?' I tell him, 'Wait. There aren't any secrets in production methods or in labor costs with present government regulations. Freight rates of raw materials are standardized. You know that the gage of metal and the amount of fill in the tower are important factors in determining its quality. So if Brand B's shipping weight is less than Brand A's, then you're getting less tower for your money, even though you're paying less. Does that really make sense to you?'

"I think manufacturers are making the best products they can at the best price they can get that's fair to us without disrupting the market. The services the factory renders us are superb as far as our everyday problems are concerned. Our manufacturers, at least, knock themselves out to help us. It's for this reason alone that I don't mind occasional small rises in price — if the quality remains in proportion." ♦



SELL ICEMAKERS

... they double your
profit opportunity
on each call

GORDON ANDERSON, assistant editor

YOU'VE NEVER SOLD AN AUTOMATIC ICEMAKER? Think it's not worth your time and money to try? Here are four good reasons for changing your mind and giving it a good chance.

► Icemaker sales are running at nearly \$30 million a year, have multiplied nearly 7 times in 10 years.

► An icemaker is a packaged product that doesn't require any engineering before the sale.

► You don't have to increase your sales force or sales calls because if you're selling commercial refrigeration or airconditioning, you're talking to many icemaker prospects.

► Service is no headache. The customer can usually do his own preventive maintenance.

I've talked to every major manufacturer about this situation. I've found that most of them think many contractors tend to shy away from handling icemakers because they don't know or understand them and because they fear they'll need to add salesmen and servicemen to handle them.

An icemaker produces ice in these basic forms — cube, crushed, or flaked. It's a completely packaged unit that requires only routine drain, water, and electrical connections. You can install it almost anywhere — behind or under a bar or counter, in a kitchen, or outdoors.

You don't have to hire or train special men. Your present airconditioning and refrigeration men can handle icemakers.

Sales are simple because you already have the customer's confidence.

Service is simple because the machine is easy to install and because the customer can clean it himself.

Remember, it's not as important for you to know its mechanical details as it is for you to know its cost savings. All you're doing is showing the customer how to channel his money — over the years, a lot of money — from buying ice to making it in an icemaker.

As one manufacturer told me, *effort* is the way to sell icemakers.

Your salesmen should realize that the prospect is satisfied with buying ice simply because he doesn't know he can get it any other way so cheaply. In other words, the chances are excellent that your salesman will be the first icemaker salesman ever to call on him that showed him the profit story. Somebody has to get to that prospect first. It easily can be you.

How? Direct mail, phone book advertising, cold canvassing, and selective personal contact are effective.

Blanket mailings once or twice a year is a relatively inexpensive method that may work for you. (To see how one contractor sells successfully this way, turn to page 44). Unless your wholesaler or manufacturer pays part of this expense, however, it can cost you quite a bit of money.

Advertising under the classification "Ice Machines — Commercial" in the yellow pages of your phone book is another method. This is a fairly cheap way,

considering how many people see your ad. Sometimes, however, you're competing side-by-side with other icemaker dealers for the prospect's attention.

One dealer told me that cold canvassing isn't generally more than 4% effective. Its cost depends only on the draw or commission you pay your canvassers. As this dealer put it, "The only way to go about it is to send the men down one side of the street and up the other. There's a big turnover in men, though, because the results are generally poor."

Selective personal calls involve trying to sell your present customers or other businesses that have applied for remodeling or new building permits. All may be logical icemaker users.

To sell and sell again, your salesmen must know the savings of ice made on the premises over purchased ice. And they must be able to demonstrate

Institutions such as hospitals also are large users of icemakers. Hospitals use crushed ice, for example, in ice packs and operating rooms because it molds well and doesn't stick or mat together. They also use ice cubes in drinking water for patients. Many hospitals can use an icemaker of one kind or another on every floor.

The future of the icemaker is bright, indeed. If you don't believe it, look at the table on this page.

Here's a product that's growing by leaps and bounds. One manufacturer told me he estimates the 1961 commercial and industrial icemaker market at \$35-50 million and that the total ice market (including purchased ice) is around \$300 million. Based on these figures, you can see that today's icemaker sales are only about 10% of their potential.

Most manufacturers I talked to feel that building a service reserve into the retail price and showing the customer how to do his own preventive maintenance are the cures to service headaches. The biggest trouble is caused by salt, lime, and scale deposits in the evaporator. This will coat the heat transfer surfaces, ice will stick to the evaporator, and it won't harvest itself. The machine must be cleaned out periodically, how often depending on the water's mineral content. You should analyze the water when you install the machine to determine this, because the harder the water, the more trouble and cost it will mean later.

Here's how you can cut your service calls by having the customer do a lot of the routine maintenance himself.

Explain to him the necessity of flushing and cleaning the recirculated water system. Tell him that if he doesn't, the machine's capacity will be reduced, the water pump will fail, or the evaporator will freeze. The greater the content of encrusting solids in the water, the more important this cleaning.

Show him where the water pump oil cups are. They must be lubricated every 90 days. Remind him to wipe off any oil overflow from the pump to keep from contaminating the recirculated water.

He should clean the water system as often as needed to remove the dissolved solids that build up on the metal surfaces. He can do this by flushing out the water system with a commercial chemical compound (usually 99% concentrated acetic acid or citric acid). Here's the procedure: turn off the electrical circuit; dump in the compound; let it circulate for about 15 minutes; drain the compound; turn the circuit back on.

The air-cooled condenser can also be kept in top working order by cleaning the coils. This can be done by using a brush or vacuum cleaner attachment or by blowing compressed air through the coils.

HOW ICEMAKER SALES HAVE GROWN

| Year | No. of units | Value |
|------|--------------|--------------|
| 1959 | 40,678 | \$22,982,000 |
| 1958 | 31,118 | 17,913,000 |
| 1957 | 30,596 | 17,364,000 |
| 1956 | 31,416 | 18,112,000 |
| 1955 | 30,534 | 15,537,000 |
| 1954 | 23,162 | 10,305,000 |
| 1953 | 26,699 | 13,677,000 |
| 1952 | 24,693 | 12,179,000 |
| 1951 | 11,995 | 8,003,000 |
| 1950 | 14,172 | 8,183,000 |
| 1949 | 6,483 | 4,085,000 |

Source: U.S. Dept. of Commerce

these savings. Dollars talk louder than mechanical details. So instead of selling the machine itself, sell the convenience, sanitation, quality, and dependability of the ice it produces.

Since you can sell icemakers in many of the places you sell airconditioning and refrigeration equipment, you've already got your foot in the door. So encourage your salesmen to talk up ice while they're pushing for that extra unit heater, food case, or condensing unit. Better yet, just give your salesmen a list of your customers, make sure they know the icemaker story, and show them the door.

The three largest icemaker markets today are food service operations, taverns, and institutions.

Restaurants, cafeterias, and other food service operations account for about 15% of icemaker sales. And it's easy to see why. They use ice in water, iced tea and coffee, and soft drinks; in cocktails; for cooling salads. They also need it to display specialty dishes as shrimp, and to chill glasses for rush periods.

About 9% of all icemakers are in taverns. Ice raises the liquor line in the glass, reducing the amount of mix needed. It's also known that customers are more likely to reorder when their ice has lasted to the end. Finally, icemakers easily fit right under the bar.

Turn the page for a case history
on icemaker merchandising

SELL ICEMAKERS—a case history

"We spend \$1000 a year to sell icemakers by direct mail"

Yes, I would like further information about
SCOTSMAN Ice Machines.

☐ Have representative contact me.
☐ Mail complete details about ☐ Super Cubers
☐ Super Flakers ☐ Super Bins
☐ Combination Ice Machine and Drink Dispenser.

NAME _____
ADDRESS _____
CITY _____
KIND OF BUSINESS _____
PHONE NUMBER _____
STATE _____

TEAR OFF HERE

FILL OUT AND MAIL
THIS POSTAGE-FREE
CARD FOR
PROFITABLE
INFORMATION

40,000 CARDS like this one are sent every year to icemaker prospects by Elliott-Lewis Corp.

"OUR TOP ICEMAKER SALESMAN is the mailman. He helps us make thousands of dollars in sales a year. We send out 40,000 mailing pieces each year to thousands of icemaker prospects. The booklets we mail cost us about \$1000 a year, and it's worth every dime," says Ralph G. Lambert, cooling division manager, Elliott-Lewis Corp., Philadelphia.

"Yes, I'd have to say that direct mail is our most effective and most economical method of selling icemakers," he said in answer to my question. A blanket mailing is sent out three times a year and a selected mailing is used once a year.

"We send out 10,000 booklets, with return cards, three times every spring. They go to prospects in 22 kinds of businesses, mostly restaurants, taverns, and institutions. We get this huge list of prospects from a national direct mailing concern," says Lambert.

"Our fall mailing of 10,000 is geared to our annual cuber campaign and is aimed at select distribution. It usually doesn't duplicate the spring mailings," says Lambert. "We call this mailing list from the phone book's yellow pages, Chamber of Commerce lists, our present customers of airconditioning and refrig-

eration, and from prospects who have shown an interest in our icemakers at trade and industry shows."

Lambert feels that the expense is not justified by immediate sales, but rather by the long-range impression made by the mailings on the prospect. "It's not unusual for the prospect to send us the return card a year later," he says. "Often we find the customer has kept the booklet and card filed somewhere for several months. Then, one day he discovers he needs an icemaker, remembers the booklet, and mails the card." Lambert told me a 1% return on the cards is about average.

"But even that small a return is effective and worthwhile," he says. "Right now, icemaker sales are about 35% of the volume of my cooling division and probably 5 to 10% of the company's total business."

"Why are the literature and return card so effective? It's not like a radio or television ad," Lambert says, "where the prospect looks, listens, and forgets. Here, we know he's at least interested enough to want to know more about us and our icemakers because he's taken the time to read our literature and to fill out and mail our card." ♦

HERE ARE YOUR MARKETS FOR HUMIDIFIERS

RON HENRY, *associate editor*

YOU CAN THANK HUMIDITY CONTROL for that last high bowling score you've been bragging about. And for your last good cup of coffee and that tasty chicken dinner, too.

These random examples show the almost endless variety of uses for humidification in commercial and industrial installations. And the market is for the taking.

"People just aren't pushing humidification," the president of a large manufacturer in the field told me. "Airconditioning contractor-dealers don't realize the profit potential awaiting them. A humidifier could, and should, be added to every heating and cooling system."

Using the above examples as proof, here's how humidification works in:

Refrigerated warehouses — for storage of such items as apples, eggs, bananas, and produce of all kinds to prevent dehydration and keep product quality high.

Greenhouses — to provide moisture so essential to healthy plant life.

Furniture and cabinet making — to prevent dimensional changes, warping, and cracking of wood.

Bakeries — for fermenting and proof rooms. For proper storage of baked goods, fresh ingredients, and wrapping materials.

Hatcheries and animal rearing — to maintain health and growth factors. To provide resistance to disease.

Tobacco and tobacco products — to maintain proper level of moisture of tobacco.

Printing processes — to eliminate static electricity curl, and dimensional changes in paper, and poor register.

Museums, art galleries, and antiques — to avoid brittleness that causes cracks in valuable books, papers, and paintings. To prevent wood frames and antiques from drying and splitting.

Textile industries (wools, cottons, silks, synthetics) — to maintain proper regain, maximum strength, and uniform tensions of fibers. To prevent static and separation of fibers.

Breweries and distilleries — to prevent wood stock tanks from shrinkage, and for fermenting cellars.

Paper and paper products (cartons, paper containers) — for eliminating cracked scores and shrinkage.

Film processing, film storage, and photography — for prevention of curl, cracking, and breaking of film.

Candy plants — to preserve taste.

Labels and decals — to prevent curling.

Leather firms — to preserve leather by preventing drying and cracking.

Electronic computers — to avoid static charges in equipment. To keep data cards from shrinking and warping.

Research, experimental laboratories, and environmental chambers — to provide required humidity conditions.

Meat and other food processors — to prevent shrinkage and avoid discoloration.

Chemicals and pharmaceuticals — for capsule and cellophane packaging materials.

Ceramics — for clay storage and molding rooms.

Cellophane — to keep cellophane stock strong and flexible. To avoid tears and static electricity.

Bowling lanes — eliminates static electricity and keeps the top covering of alleys cleaner, thereby improving bowling scores. It also keeps alleys and pins more lively.

Coffee industry — keeps beans in prime condition, improving quality and taste. Lack of proper humidity in storage can cause weight losses up to 2.7 lb. per 90-lb. bag.

Poultry industry — overcomes dry air in hatcheries where high temperatures are a must. Replaces moisture lost in egg storage.

There's a more extensive list of markets for humidifiers above.

Continued on page 46

YOUR MARKET FOR HUMIDIFIERS

But uses of industrial and commercial humidification are not limited to these. There are many unusual applications. For example, one manufacturer told me his engineers were called to a breeder plant to hear 7000 mice coughing! Excessive dry air had spread an epidemic of colds from one breeder box to another.

Quick action saved a colony of 30,000 mice that would otherwise have been wiped out.

What was missing? A steady 50% relative humidity.

Industrial and commercial humidification is best suited for use in heating and cooling duct systems. More and more architects, engineers, and home builders are insisting upon controlled humidity along with controlled heating and cooling in both new and re-modeled buildings.

Institute of Humidification figures show that less than 20% of the potential market in industrial and commercial humidification has been tapped. Humidification is needed most during cold weather when places are artificially heated.

Here's what you, as an installing contractor-dealer of airconditioning and heating equipment, should be telling humidifier prospects:

"At any time of the year when your plant is being heated to 75 or 80 F, the relative humidity in your rooms is reduced 5 to 25%. Moisture is drawn from your stock during processing. Depending on what is being processed or stored, this may result in reduced strength; lower production; more seconds; loss of weight; and poor quality."

What results can be expected with humidification?

- Increased production of 3 to 8% through continuous operation and non-stoppage of machinery.
- Uniformity of production.
- Elimination of static electricity.

The humidifier industry is making a strong comeback after several years of semi-obscurity.

With prices at all-time lows, the field is open to airconditioning and refrigeration contractor-dealers for increased sales. If controlled humidity is so vital to production, storage, and worker comfort, then why aren't more humidifying units and systems being sold?

The answer is simple. Contractors just don't capitalize on the situation and many executives just don't realize that lack of proper humidity control is to blame for many of their production problems.

However, there are some contractor-dealers who do realize the market potential. They have learned that humidifiers can be sold at prices which were unheard of a few years ago.

If you asked one of them about his experiences with humidifiers, here's what he might tell you:

Selling humidifiers opens the door for summer cooling equipment, furnace replacements, heating modernization, controls, filters, air purifying devices, and many other accessories.

Prices of humidifiers go all the way to \$400 for a single commercial model, and large installations may use several models. Contractor markup ranges from 10 to 25%. And of course you'll charge your regular rates for labor and materials required on each job.

A good serviceman can install up to four small humidifiers in a day, but you can figure up to four hours for a large unit.

There's no inventory to keep. Chances are your wholesaler will have the model or models you need. If he doesn't, you can probably get delivery within a week.

There's no trick to installing a humidifier. Simply follow the manufacturer's instructions.

It's easy for the customer to service humidifiers. All it calls for is a frequent filter change, plus 15 minutes to oil the motor and clean algae and scum from the sump cap.

HERE'S HOW TO FIGURE A TYPICAL HUMIDIFYING JOB

Installation: New York City printer specializing in color work.

Problem: Loss of man hours, production time, and waste of stock due to low winter humidity conditions.

Conditions: Press area of 6000 sq.ft. with 12' ceiling. Average winter temperature approximately 78 F.

Information needed to figure humidity load requirements:

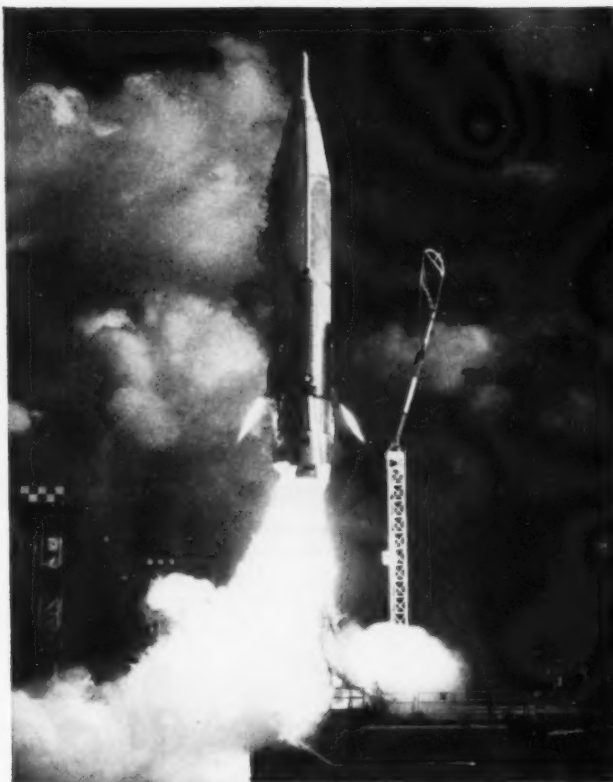
| | |
|--|--------|
| Floor area (sq.ft.) | 6,000 |
| Ceiling height | 12' |
| Total volume of area (cu.ft.) | 72,000 |
| Estimated air infiltration losses/hr. | 1.5 |
| Mechanical ventilation | none |
| Average winter room temperature | 78 F |
| Desired relative humidity | 45% |
| Total grain content of air at desired conditions | 65 |
| Average moisture content of outside winter air | 15 |
| Grains of moisture to be added | 50 |

Equipment used: Six humidifiers of 10 lb./hr. each were installed with two sets of humidity controls. Relative humidity maintained at 45%.

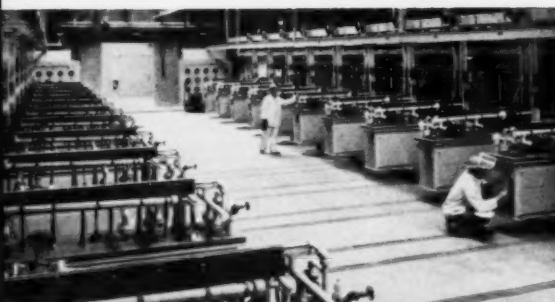
Total cost: \$2500

Results: Manufacturer says printer was able to save in both labor and wasted stock to extent that equipment paid for itself in two years. Humidifiers not only used during winter, but frequently in use for nine or ten months of the year, keeping humidity from falling below 45% during fall, winter, and spring seasons. Summer-time operation was set so relative humidity would not fall below 55%, filling in during low humidity days.

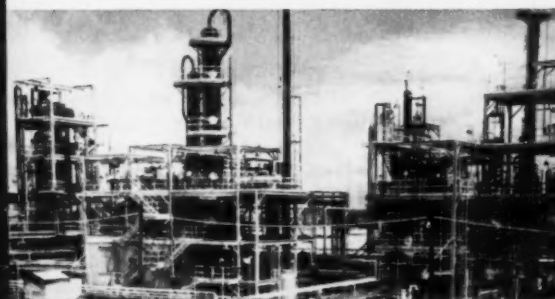
Formula:
$$\frac{\text{Total volume} \times \text{Estimated air changes/hr.} \times \text{Grains of moisture to be added}}{14 \text{ cu.ft./lb. air} \times 7,000 \text{ grains/lb.}} = \frac{72,000 \times 1.5 \times 50}{14 \times 7,000} = 54 \text{ lb./hr.}$$



Providing tremendous thrust, new rocket fuel oxidizers such as liquid fluorine, chlorine trifluoride and other halogen fluorides may help us conquer space. Like "Genetron" fluorinated hydrocarbon refrigerants, they are important developments of General's long research in fluorine chemistry.



Largest privately-owned fluorine producing facilities in the world are located at General Chemical's Metropolis, Ill., Works. In these cells elemental fluorine is produced for use as a high-energy oxidizer of rocket fuels and for production of uranium hexafluoride for the Atomic Energy Commission. Allied Chemical's leadership in fluorine chemistry is applied to continuing improvement of "Genetron" refrigerants.



This giant fluorine chemical center in Baton Rouge, La., makes many of the fluorine-based compounds required by industry and is a major production center for "Genetron" refrigerants. "Genetron" refrigerants are also manufactured in Danville, Illinois. Soon a new plant in Elizabeth, N. J., will provide a large new source for "Genetron" refrigerants.

What do rockets have to do with **genetron**® super-dry refrigerants?

Just this. Part of the "big push" into outer space may come from fluorine-based propellants now being supplied by General Chemical to the nation's rocket and missile research centers. The same know-how that makes General Chemical the leader in fluorine chemistry applies equally in other areas—especially in the development and production of "Genetron" fluorinated hydrocarbon refrigerants.

Behind "Genetron" Super-Dry Refrigerants is a research organization which is internationally recognized for its work in fluorine chemistry. Even more important to every user of "Genetron" refrigerants are the Company's advanced manufacturing facilities, which have helped bring quality standards for fluorinated hydrocarbon refrigerants to new highs of purity and dryness—a major contribution in itself.

"Genetron" Refrigerants are approved, accepted, *preferred* because they are *performance-proved*. Refrigeration engineers, contractors and servicemen endorse them. Wholesalers recommend them.

It makes sense to rely on the leader in fluorine chemistry for fluorinated hydrocarbon refrigerants. Next time you order, insist on "Genetron" and be sure of the best! Available from wholesalers everywhere.



GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

Look to the leader in fluorine chemistry... insist on "Genetron."
circle 6 on reader service card

PROJECT **Up grade**

No discussion of industry ills would be complete without mentioning the need for better training facilities for servicemen. In fact, many people in the industry feel that the shortage of trained servicemen and installers is the greatest single block to expansion.

A poorly-trained serviceman can only cause trouble.

An incorrect diagnosis of trouble creates customer dissatisfaction and time-consuming call-backs. An intensive training program can obliterate this problem and bring bigger profits to all of us.

Just over a year ago, in our July 1960 issue, the urgent need for such an energetic educational program was the topic of our editorial for that month, "A challenge . . . and an opportunity."

We applauded ARI's efforts in setting up a special committee to study possible approaches to the problem. An educational program resulting from this committee's work, we felt, would be an excellent first step toward solving the problem. However, we pointed out that how well it works still depends on how enthusiastically the installing contractors and service organizations in each area accept it, cooperate with it, and recruit for it.

The ARI committee was responsible for the 1-year course just ended at a Syracuse, N.Y., vocational high school. Associate editor Ron Henry has been in close contact with committee chairman Art Meling of Carrier Corp. to report what went on.

Editor Henry visited the school this spring and talked with instructors and students. He presents, on the following pages, an up-to-the-minute report on what problems ARI came up against in staging a course in refrigeration and airconditioning under a local system of adult education.

This report is the first in a series of studies on the efforts of the refrigeration and airconditioning industry to provide that training so vital to our growth.



CLASSROOM INSTRUCTION provides the basis for further work. Here instructor McLeod explains refrigeration system

ARI-publishes top-grad

ONE YEAR'S RESULTS don't prove the point, but they go a long way toward showing the industry what can be done. That's how Air-Conditioning and Refrigeration Institute feels about the refrigeration and air-conditioning course held this year at a Syracuse, N.Y., vocational high school.

The course was given two nights a week at Central Technical High by instructors from Carrier Corp. Carrier gave the school much of the equipment used in the course.

Arthur E. Meling, ARI training committee chairman, told me:

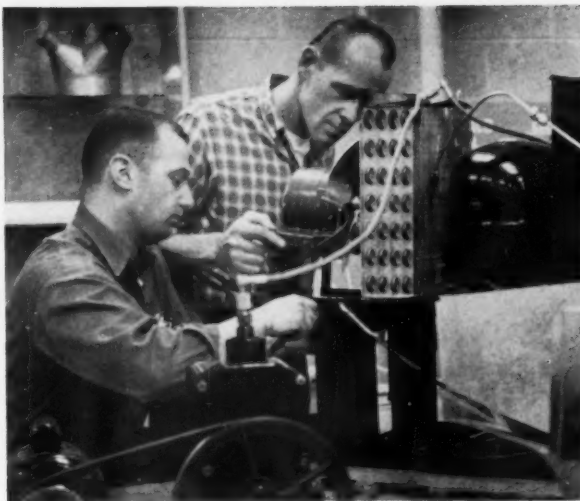
"We didn't decide until late summer to start the course in September. This late start forced us to do too many things too fast and we ran into several bottlenecks, even though we knew Central's principal and had worked with his staff before.

"School funds didn't come through fast enough to equip the laboratory promptly. So there was little lab work the first semester.

"We wrote letters and put up posters advertising the course. Instead of the 20 men we expected, we got 70. Since we didn't have time to set up a method for screening applicants, we had to put everyone together, experienced or not.



ACTUAL EQUIPMENT gives students a chance to see first hand how components work together in a complete system.



GROUP PROJECTS allow students to work on the job putting their skills to test assembling systems in the classroom.

School night courses provide service training in Syracuse

"In promoting this course, ARI is trying to spare distributors and contractor-dealers the task of teaching refrigeration and airconditioning to their apprentices. We hope to train, at high school and vocational school level, youths wishing to become service engineers.

"The first year we had more men from outside the industry than from within."

Meling continued, "After completing courses such as these, men could continue their training in on-the-job classes plus training programs of other industry groups if such courses are available in their area. These groups include Refrigeration Service Engineers Society; Refrigeration and Air Conditioning Contractors Association; and the United Association.

"We do not intend to supplant these existing programs," emphasized Meling. "This is what we plan to accomplish with these courses:

"First, we want to upgrade service to the public by allowing distributors and contractor-dealers to concentrate on their own work, rather than on training.

"Second, we want to promote industry growth by maintaining a steady supply of manpower."

"ARI's biggest difficulty," Meling told me, "is putting

together a complete package for other cities to follow in introducing similar courses in its schools. When a city wants to start a course, we should be in the position to hand them a kit and let them go ahead. This kit should contain a basic text, laboratory procedures, tools, and an outlined curriculum, all having been proven to work.

"We should be able to tell them how to deal with school officials; what to do first, second, and so on; how to screen applicants; what kinds of materials to use; how to do this and how to do that.

"The need for such a package is urgent."

Meling feels young men should be taught the fundamentals so they can locate trouble immediately out on the job. "Unless we can train twice as many people during the next 10 years as normally would be available, we'll be seriously hampering the expansion of our industry," he told me.

Serving with Meling on the ARI committee are Harry C. Gurney, general sales manager of Janitrol Heating and Air-Conditioning Div., Midland-Ross Corp.; Geroge E. Mills, director of public relations for ARI; and Frederick J. Reed, ARI's chief engineer.

Continued on Page 50

Here's what students say about the courses

A survey of the students made near the end of the course showed that most of them suggested changes be made in subsequent semesters. Here are the results of a questionnaire distributed by instructors Glenn and McLeod:

Q. Was the course what you expected? If not, why not?

A. *About 50-50. Typical reasons given by the disappointed: "Not enough shop," "Not enough practical work."*

Q. Do you understand refrigeration better than you did before taking the course?

A. *Unanimously yes.*

Q. Did the course move too fast, too slow, or just right for you?

A. *Most said just right.*

Q. Do you now understand the airconditioning process better than you did before.

A. *Most said yes.*

Q. What subjects would you like to have repeated or discussed further?

A. *"Troubleshooting," "Controls," "Wiring," "Want more units running."*

Q. Has the instruction been satisfactory? If not, how can it be improved?

A. *Instruction termed generally good, but students didn't like the text. McLeod explained that the text, which was hurriedly prepared, arrived late. The sequence of text chapters did not follow the course. Students also objected to the many technical errors in the text.*

Q. How educational was the laboratory work?

A. *"Little," "Good, but not enough," "More with better planning."*

Q. What suggestions do you have for improving the laboratory work?

A. *"More instructions," "More equipment," "Have course parallel book," "Give step-by-step instructions," "Break classes into smaller groups."*

Q. Do you feel that you learned enough to qualify as a mechanic's helper on refrigeration and airconditioning work?

A. *More than half said yes.*

Q. Should we have covered less but covered it more thoroughly?

A. *About 50-50.*

There was a space for other comments. Students said they would like personal laboratory instruction. Some asked for all lab work. Some condemned the lack of equipment. Some said the instruction was on too high a level, that it assumed students had more experience than they did.

SCHOOL PROVIDES TRAINING

What about the course itself? Two Carrier men were instructors — Robert Glenn, a service training instructor, and David E. McLeod, room airconditioner development manager. Here's what McLeod told me:

"Everyone was enthusiastic when the course started. But those with little interest in airconditioning soon dropped out. Next year we are going to have to screen applicants more carefully, to get men with similar experience together.

"Only 35 men completed the course out of the original group. But this is a good percentage for a night extension course, particularly one meeting for more than two hours each of two nights.

"Several students had no current industry affiliation."

Will the course be repeated this fall? "Yes," said McLeod. "In fact, we are thinking of adding an advanced course."

What draws men to these classes? McLeod offered these reasons:

(1) The course gives men in the field an opportunity at a better job through education.

(2) This training gives men outside the field a chance at new opportunities.

Refrigeration and airconditioning training wasn't limited to night-time activity in Syracuse last year. Central High officials added it to their day-time curriculum, combining it with its regular sheet metal course.

Carrier officials feel this marriage of teaching refrigeration, airconditioning, and sheet metal is a natural, and practical approach. Why? Since in the residential field it's not unusual for men working with small dealerships to be equally adept in sheet metal, installation, and service work.

One student in McLeod's class was the high school sheet metal instructor. Since he was covering at night in one year what his high school students would cover in three, he easily was able to stay ahead of his own students.

Other night school students included a 35-year-old beer truck driver who often came in late from making deliveries, but didn't miss a night; a 33-year-old machine operator who drove 15 miles each way to class; a 37-year-old drafting supervisor; and a 36-year-old steam fitter.

Other examples included a design draftsman, an engineer, a tool grinder, a spot welder, and a maintenance man.

I talked with two of the most promising students, both already holding jobs in our industry. They felt the course was going to pay off in better jobs; were amazed how quickly they could use what they learned; and exhibited an intense desire to learn more about the industry.

Their only regret was that they didn't have more laboratory work during the first part of the year.

Instructor McLeod, too, benefited from the course. "It gives me a chance to learn about things that are outside my own area of work." ♦

Applications MANUAL

ARTHUR H. FARR, consulting editor, airconditioning

Careful design, clever installation make customer and contractor happy

AIRCONDITIONING REQUIREMENTS of a modern mortuary vary widely. This is the story of how one contractor designed a system to satisfactorily meet these requirements, and how he installed it in a way that sharply cut labor time and costs.

Result: a satisfied customer — and a happy contractor who made *more* than he figured on the job, not less.

This mortuary is a two-story-and-basement building. First floor (see diagram) consists of a main lounge capable of accommodating 75 to 80 people, an office, lavatories, and one large room in which funeral services are held. In the basement is the embalming room, another lounge, and more offices. Second floor is devoted to living quarters and the casket display room.

The large main floor room is equipped with folding doors which can be used to partition it into five small

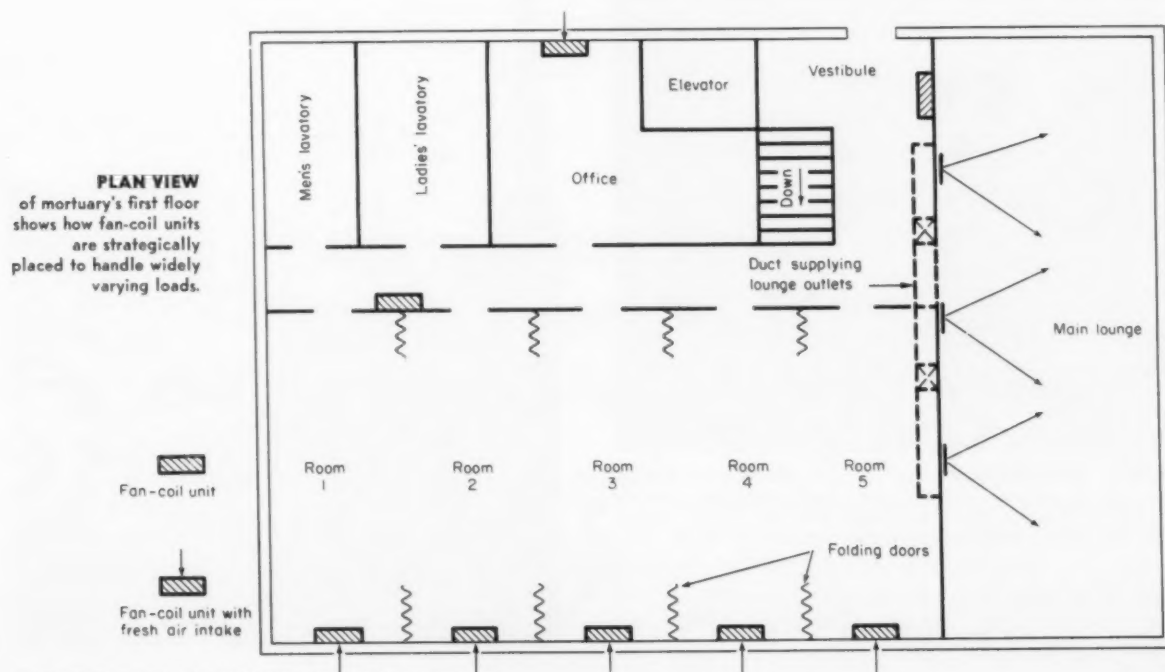
rooms. Sometimes separate funerals are held in these five rooms simultaneously. At other times, one large funeral may require all of the available space. The big problem was how to get proper air distribution under both circumstances with a single central station system. Here's how it was handled:

SYSTEM DESIGN took advantage of the versatility of a combination chilled and hot water system to provide year-round airconditioning to meet these varied requirements.

Water chiller and boiler in the basement supply chilled or hot water to two main piping loops. One of these loops is in the basement ceiling. It handles both the basement and the first floor. The other loop is in the first floor ceiling. It handles the second floor.

All of the second floor rooms, and all of the first

Continued on page 52



APPLICATIONS MANUAL

floor rooms except the main lounge, are handled by individual semi-recessed fan-coil units. There are 21 of these units in all. Each unit located on an outside wall has its own fresh air intake in the form of cast aluminum vent bricks built into the masonry behind the cabinet.

Each of these individual fan-coil units has its own line voltage thermostat mounted on the wall. A sub-base permits seasonal changeover of the thermostat by turning the unit's 3-speed fan on and off. Fan speed is selected manually.

The main lounge is conditioned by a separate fan-coil unit located in the basement equipment room. Air is forced up two risers to a section of horizontal ductwork, from which three outlets deliver it into the lounge. This unit has provision for using 100% outside air when outdoor temperatures permit. It is equipped with economizer control.

Also in the basement are two ceiling-mounted, horizontal fan-coil units. One serves the embalming room, which is sealed off from the rest of the building. The other supplies the basement offices through a simple overhead duct system.

Fresh air relief in the building is provided through exhaust fans in toilet rooms, the embalming room, and the basement lounge.

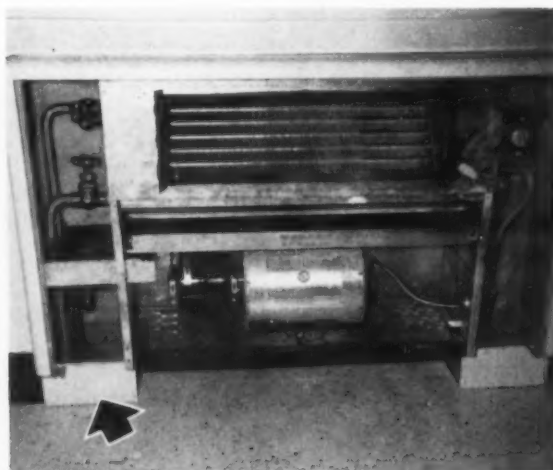
INSTALLATION SHORTCUTS developed during construction of the building saved many man hours of rough-in and installation time, without any sacrifice in the quality of the job.

Each of the individual wall-type fan coil units has connections on one end for water supply and return lines, and for a condensate drain, all of which run down through the floor. Normal practice would have been to install individual sleeves, two of which would have to accommodate insulated pipes. Instead, the labor which would have been required to set these 63 sleeves in the poured concrete floors was greatly reduced by simply wiring in place at each fan-coil location a 12" square of 3" corkboard. After the concrete was poured around these corkboard slabs, the top of each slab was flush with the surface of the finished concrete floor.

The slabs were deliberately made larger than necessary to accommodate the three pipes, so as to provide some latitude in positioning of the fan-coil units. After the concrete floors were poured, it was a simple matter to drill holes through the cork and run the pipes through them. The cork slabs themselves became the insulation for the supply and return lines, and only a bead of mastic was needed to seal the joints where the pipes entered the slabs.

The finished floor of asphalt tile was laid over the cork slabs where they extended out beyond the base of the fan-coil units.

Still more installation time was saved by gasketing an oversized fresh air entrance on the back of each fan-coil unit. The original gasket around the small fresh air intake on the back of the unit was removed, and this intake was then centered in a large frame of 1" rubber gasketing. This allowed about a 12" lateral clearance and 6" vertical clearance in the final positioning of the units, so that it was not necessary to align the unit's fresh air intake exactly with the fresh air vent bricks. ♦




SPEEDY INSTALLATION of fan-coil units semi-recessed in walls was assured by running supply, return, and drain lines (arrow) through corkboard slab set in concrete floor at time of pouring. This eliminated need for precise positioning of units.

HORIZONTAL fan-coil unit conditions basement embalming room, which is sealed off from the rest of the building. A similar unit handles basement offices through overhead ducts.





In every profession, one instrument gets to the heart of the problem quickest, easiest, and most accurately. Amprobe  is the stethoscope of the electrical industry

The Amprobe RS-3* enables you to take voltage, current and resistance readings to help diagnose electrical "ills." It saves you time and effort; it adds to your reputation for ability and service. Here are a few typical applications. Ask your distributor or write today for more details: ■ check resistance of starting and running windings ■ check phase balance ■ determine resistance of motor-control solenoid coils ■ test for low-voltage conditions ■ make commercial and industrial load surveys.* \$52.50 (slightly higher outside U.S.).



AMPROBE INSTRUMENT CORPORATION

630 MERRICK ROAD, LYNBROOK, NEW YORK
Canada: Atlas Radio Corp., 50 Wingold Ave., Toronto

circle 10 on reader service card

Contractor-Dealer ACTIVITIES

NWHA gives contractors selling tips for crashing apartment building boom

Now's the time for airconditioning and heating contractors to cash in on the booming market in apartment construction. That's the recommendation of National Warm Air Heating and Air Conditioning Association.

Top-quality apartments don't have a vacancy problem, so contractors face a tremendous market potential in installation of ducted system air cooling.

NWHA offers five reasons why contractors should seriously go after the apartment house market today with warm air airconditioning:

- A ducted system assures greater comfort at less cost than any other type of combined system.
- Only a ducted system offers occupants indoor comfort with full ventilation.
- Filters installed as a part of ducted air systems can save up to \$1000 in maintenance and decorating costs for a single apartment unit in 10 years.
- It's possible to bill the cost of fuel or energy to individual tenants when each apartment has its own ducted cooling system.
- Individual ducted air systems can be installed in or adjacent to each suite, freeing basement space for other uses.

Briley joins Saunders

George C. Briley has been named vice president and sales manager of Kerby Saunders, Inc., New York City. Briley will head world-wide sales of airconditioning, heating, refrigeration, and plumbing and industrial piping.

A former regional manager of York Div., Borg-Warner Corp., Briley was more recently national field sales manager for Frick Co.

How can you sell this market? NWAH offers these tips:

(1) Talk to your architect about the advantages of ducted systems in apartment houses and the other comfort services you can offer in this field.

(2) Build up your ducted air system story to your friends at lending institutions who have a big financial stake in apartments that are built. Since they have money tied up in these projects, they'll be able to put you in touch with owners planning to build apartments, or their architects and contractors.

(3) Sell the apartment owner on ducted air comfort and your services. This will make getting the air-conditioning contract an easier job for you.

Remember, the apartment house market is a non-stop market. Older people and newlyweds are increasing in numbers. The baby boom of the post-World War 2 era means a tremendous increase in new families in the next few years.

Add to the above the number of people over 50 years old, expected to hit 50 million by 1970. Many of these will move into apartments as their children go away to school or marry.

High cost of land and a scarcity of suburban property are encouraging many people to return to cities to live and apartments are being built for them.

These reasons account for estimates that apartments will represent a third or more of all dwelling starts during the next four years.

Limbach celebrates 1st year in N.E. area

An open house and plant tour helped Limbach Co. show off its newly-constructed plant in Medford, Mass., near Boston. The com-

pany just ended its first year of operations in New England.

During that time, employment grew to more than 200 and sales rose to \$7 million.

Limbach's new 28,000-sq.-ft. plant is fully equipped for mechanical contracting, design and fabrication of ductwork and piping for airconditioning, heating, and plumbing systems.

Martin C. Scanlan has been named production manager of Limbach's mechanical department in Boston. He had been in the same capacity for the firm's Columbus, Ohio, office since 1953.

Chicago RACCA members take time out for golf

A record turnout of more than 350 attended the 14th annual golf tournament and dinner sponsored by Chicago's Refrigeration



TOP GOLFER in Chicago-RACCA's annual golf tournament Ted Erickson (left) receives the traveling trophy from Barney Pruyn, co-chairman of the golf committee.

and Air Conditioning Contractors Association. Low score was turned in by Ted Erickson of Merchants Equipment Co.

Chief guest speaker at the dinner was Joe Heinsen, batting practice catcher and pitcher of the Chicago White Sox. RACCA-National president Walter McCarty also addressed the group, telling members of current RACCA-National activities and of its various local groups in the country.

Local wholesalers and manufacturers contributed 30 special door prizes.

how do distributors rate **NOR-LAKE** refrigeration products?

“NOR-LAKE GETS A's IN SCHOOL SALES!”



... says J. A. Kolbe, of John G. Kolbe Company, Richmond, Va.

“It's much easier to sell dollar-conscious schools when our product has both variety and quality—like NOR-LAKE. NOR-LAKE'S quality line means selling flexibility—allows us to compete for sales effectively in both institutional and commercial fields.

“Then too, NOR-LAKE'S ‘Fine-Line’ appearance is backed up by rugged design based on years of refrigeration experience. Our success in the school market—where NOR-LAKE'S ruggedness and reliability is so important—has returned double dividends to us. Our experience shows that NOR-LAKE means savings in time, trouble and service calls. We get satisfied customers (the most important sales asset for any dealer).

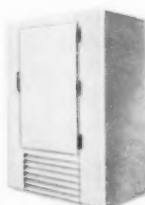
“Now you know why we feel NOR-LAKE products rate A's for quality sales. Naturally Kolbe Company is proud to display and sell NOR-LAKE'S line of refrigeration products, and we expect to continue this pleasant association for many more years.”

**John G. Kolbe Company is one of the South's largest suppliers of equipment for schools, hotels, and restaurants.*

NOR-LAKE'S “FINE-LINE” IS A FULL LINE



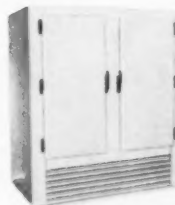
biological refrigerators



refrigerators



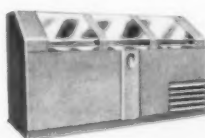
walk-ins



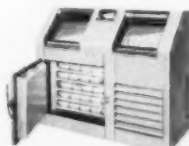
freezer-refrigerator combinations



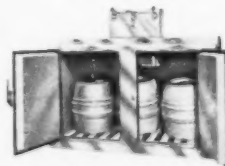
freezers



bottle coolers



ice cube makers



direct draws

Write today for information concerning NOR-LAKE sales opportunities in your area.



NOR-LAKE, inc.
Second & Elm,
Hudson, Wisconsin,
Dept. 205

Wholesaler **ACTIVITIES**

Vernon Bushnell presents advantages of hermetic absorption equipment

Hermetic design gives absorption refrigeration equipment new characteristics of reliability and long life comparable to electric hermetic centrifugal machines. That's what Vernon E. Bushnell recently told a meeting of National District Heating Association.

Bushnell is manager, absorption cold generator sales for Trane Co., manufacturers of the first large hermetic absorption water chiller.

He listed four more features that make absorption cooling desirable:

- Low operating costs.
- Automatic operation — the main steam throttling valve is controlled by a leaving chilled water temperature controller.
- Automatic decrystallization — hot solution, which can not pass

through the heat exchanger, is dumped back into the absorber and pumped through heat exchanger tubes. This solution dissolves crystals formed on the outside of the tubes.

- Simplified purge system — purge unit operates only intermittently, using a fractional horsepower motor. Because of this, the unit has lower operating costs and less maintenance than open absorption machines.

Bushnell says Trane's hermetic design eliminates air leakage, long a serious problem for large absorption machines.

Refrigeration Equipment moves to new location

The St. Joseph, Mo., branch of Refrigeration Equipment Co. of Kansas City has moved to a new location. Its new address is 629 S. 8th St.

In addition to its Kansas City main office and the new St. Joseph location, there are branches in Topeka and Wichita, Kan.

Region 5 adds 3 members

Three wholesalers have joined Region 5 of Air-Conditioning & Refrigeration Wholesalers. They are Eastern Refrigeration Supply, Greensburg, Pa.; Gennett & Sons, Inc., Richmond, Ind.; and Kamm Supply Co., Toledo, Ohio.

Adds refrigeration parts

Robbie's Radio & TV Supply, Inc., Boise, Idaho, wholesaler of electronic equipment, is expanding its operations by adding refrigeration parts to its stock.

Newton H. Walker is sales manager.

REGIONAL ROUNDUP

Three meetings are scheduled for September. **Region 1** meets Sept. 12-14 at the Wianno Club, Wianno, Mass. John S. Robinson, general manager of THE REFRIGERATION & AIRCONDITIONING BUSINESS, will be the main speaker.

* * *

The Diplomat Hotel will be the scene of the **Region 4** meeting Sept. 14-16 in Hollywood, Fla. And **Region 10** members get together Sept. 22-24 at Otesago Hotel, Cooperstown, N.Y.

New plan developed for returning material

A set of new procedures has been developed for returning inoperative motor compressors and parts by wholesalers for Evansville Div., Bendix-Westinghouse Automotive Air Brake Co. The new system started in May.

All compressors and parts returned to Bendix-Westinghouse are accepted for straight credit and are not replaced to the wholesaler's inventory.

Donald J. Wood, general sales manager of the Evansville Div., lists four advantages to the wholesaler. They are:

- More rapid flow of paperwork between wholesaler and Bendix-Westinghouse;
- Wholesaler can control inventories quickly with customer, bringing quick factory decisions on warranty;
- Wholesaler can control inventory according to seasonal requirements; and
- Wholesaler can take advantage of lowest freight rates by ordering replacement motor compressors and parts in quantity.

**YOUR WHOLESALER
CAN SERVE YOU—LET HIM!**



WHOLESALERS CAN SHOW more stock in less space with this new merchandising floor display from Madden Brass Products Co. Since most of the firm's products have new package designs, the display is aimed at stimulating sales of items usually stocked out-of-sight behind or under counters. The wood and masonite display has adjustable shelves, glass dividers, and plated hooks. Products cartons feature flip-back lids.

NEW FROM
NIBCO

THIS OVERSIZE HEX

is "in the clear" for open end or pipe wrench—and all the leverage you need. No need to take off packing nut and handwheel to remove bonnet!

BONNET COMES OFF EASILY!

Decimal packed in sales cartons of 5 or 10 (master cartons of 50 or 100), depending on size, these new NIBCO Stop Valves and Stop and Waste Valves are now in supply throughout the nation.



Entire assembly, handwheel to Buna-N disc, interchangeable with others in NIBCO line of Stop Valves and Stop and Waste Valves.



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NEW RBM

25 AMP — 2 AND 3 POLE

CONTACTOR

TYPE 85

DESIGNED FOR UL AND CSA LISTING

Simplifies panel circuitry — helps eliminate terminal boards — cuts wiring costs.

Here is the first air conditioning contactor designed so auxiliary terminals can be added to power wiring terminals. Also, extra dummy wiring terminals can be added when required. Such flexibility can help eliminate terminal boards, lower wiring costs, and provide more versatile and simplified panel circuitry. Auxiliary terminals can be #8 screw or 1/4" single or double quick-connect. Dummy terminals are #10 screw with or without the auxiliary terminals. Consult your application engineer or write for Bulletin C16.

1. Auxiliary terminals available in single quick-connect, double quick-connect or screw type.

2. Coil terminals: single quick-connect, or lead wire.

3. Cushion mounted (grammet).

4. No-kiss position.

5. Front accessible terminals for straight through wiring.

6. Plated magnet pole, for corrosion resistance.

7. Easily replaceable contacts, coil and magnet.

8. Visible contacts.

9. Not position sensitive.

10. Shallow panel depth.

2 1/2"

3"

2 1/4"

Patent Pending

**ONLY RBM HAS ENGINEERED
A COMPLETE FAMILY
OF AIR CONDITIONING CONTROLS**

TYPE C-30, C-40, C-50 CONTACTORS
Write for Bulletin 1070

TYPE 80 CONTROLLER
Write for Bulletin C-11

TYPE 75 POWER RELAY
Write for Bulletin 1030.

SERIES 120000 SHUNT TYPE RELAY—SPW, SPNC OR NO-NC
Write for Bulletin 1010-A.

GENERAL PURPOSE RELAY
Write for Bulletin 1060

SERIES 120000 POTENTIAL STARTING RELAYS
Write for Bulletin 1010-A

BIMETAL TIME DELAY RELAYS AND THERMO-STATIC DEVICES
Write for Bulletin C-15

ENCLOSED BANTAM RELAY TYPES 83 & 84
Write for Bulletin 1080

RBM CONTROLS DIVISION
LOGANSPORT, INDIANA
Factories Located at North Manchester and Logansport, Indiana

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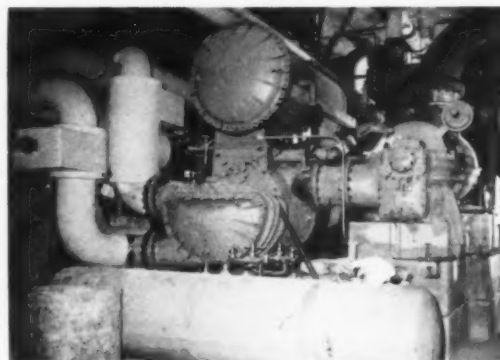
RECENT

Installations

Continued from page 24

3600-Ton gas system 31 stories up

ALL OF THE MECHANICAL EQUIPMENT of the 3600-ton gas airconditioning system is hidden above the 31st floor of the new First City National Bank building, Houston, Texas. As one project engineer explained it, exhaust fans and the 3-story cooling tower had to be near the top of the building anyway. So by putting all of the cooling equipment there, plus boilers and steam



turbines, an unsightly chimney stack was eliminated. A ceiling hides wiring and ductwork for the 34' high lobby.

Each office has individual thermostats which control the flow of chilled water or hot water through the coils. The airconditioning equipment includes three Carrier centrifugal compressors driven by three 1200-hp steam turbines, each with a nominal rating of 1200 tons per hour. The three boilers were lifted to the top of the 32-story building then lowered through a roof opening to their permanent place on the 31st floor.

The heat isn't on this store

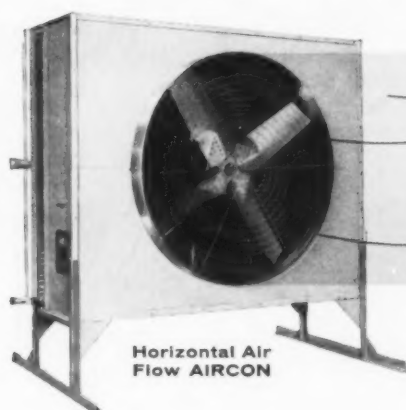
A MAJOR DEPARTMENT STORE in Houston, Texas, will never require any artificial heat, even in the coldest weather — it's provided by lights, electrical fixtures, store personnel, and customers. In fact, much of the store will need winter cooling. Both applications are due to a 600-ton York airconditioning and heat conversion system.

Engineers designed the system so heat is forced through louvers into a return air system for exhaust or mixing with fresh air and re-use. In summer, the system pushes heat out with a

Continued on page 60

McQUAY heavy duty, air cooled Aircon condensers are constructed to give complete, dependable operation for either refrigeration or air conditioning—or both. They are available in horizontal or vertical air flow models in 19 sizes from 7½ to 100 tons nominal capacity in a single unit. Unlimited capacity is available in multiple unit installations. The low profile, quiet operation, flexibility and the economy in installation and operation make the McQuay Aircon ideal for every installation. The McQuay Seasoncontrol, available as an accessory, offers automatic head pressure control for use any time of the year, winter or summer. For complete information call your local McQuay representative, or write McQuay, Inc., 1643 Broadway Street N. E., Minneapolis 13, Minnesota.

McQuay
Means Quality



Horizontal Air
Flow AIRCON

for AIR
CONDITIONING,
REFRIGERATION
OR BOTH

19 SIZES • 7½ TO 100 TONS IN A SINGLE UNIT

McQuay INC.

AIR CONDITIONING • HEATING • REFRIGERATION

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THE REFRIGERATION & AIRCONDITIONING BUSINESS/SEPTEMBER 1961



Vertical Air
Flow AIRCON

RECENT

Installations

Continued from page 58

steady flow of fresh air pumped through refrigeration coils and cooled to the temperatures of 10 zoned thermostats. Air running through the coils is cooled and used as either cold air in summer or reconditioned, reheated air in winter.

The central cooling unit is a hermetically sealed centrifugal refrigeration machine with automatic roll filters. The central airconditioning room uses return cool air from both interior and exterior zones where there's a natural heat loss.

Multiple units cool shopping mart

THE RECENTLY-OPENED Atlanta Merchandise Mart, largest commercial building in the South, is heated and cooled by 440 Fedders heat pump airconditioners instead of the usual single big-building system. The units are installed around each floor's perimeter of the 23-story building.

Mart officials claim that packaged heat pumps

operate more efficiently than a big-building system, and at a fraction of the cost. Use of multiple units are said to have saved eight miles of piping and tubing, 8,000 pipe fittings, two miles of galvanized ductwork, 150 motor starters, 75 fans and motors, 100 duct heaters, 1000 gages, meters, thermostats and other controls.

Rink profits by close pipe centers

USE OF ALL-WELDED wrought iron brine piping spaced on 2" centers instead of standard 4 or 4½" centers permits year-round skating on the Lloyd Shopping Center artificial ice rink in Portland, Ore.

Closer pipe centers provide more pipe surface per ice area, better temperature distribution, and faster heat exchange than in rinks having wider pipe centers.

The rink's floor has 1½" dia. wrought iron piping, with 6 and 8" dia. pipe for supply and return systems. Ice temperature is kept at 26 F, and ice thickness is maintained between ¾" and 1½". A shell and tube type heat exchanger circulates hot brine through the piping when the rink is used for other activities.

Piping for the 75 x 176' rink, which requires 170 tons of refrigeration, was manufactured by A. M. Byers Co.

LA CROSSE QUALITY LEADS THEM ALL!



LA CROSSE DIRECT DRAW

Refrigerated faucets guarantee perfect beer temperature . . . no excessive foam . . . no morning "draw off". It's tops in design, engineering and efficiency.

KUBE KING . . . produces constant supply of crystal clean Kubes (approx. 3200 per 24 hours) . . . 110 lb. storage.



BOTTLE COOLER . . . self contained electric complete . . . up to 45% greater capacity! The all round leader.



LA CROSSE COOLER COMPANY

3002 LOSEY BOULEVARD SOUTH, LA CROSSE, WISCONSIN



WALK-IN COOLERS



BEVERAGE COOLERS



DIRECT DRAWS



CUBE MAKERS



DRAINBOARDS

EXPORT OFFICE: 60 EAST 42nd STREET, NEW YORK • CABLE: EXPEDITE

circle 41 on reader service card



Impact cutting tried and abandoned: Truco Diamond Drills and portable equipment drill 123 holes 3"-3½" in 13" reinforced concrete in just 42½ hours

PROJECT: Veterans' Hospital, Minneapolis, Minn. **DISTRIBUTOR:** Enghausen Co., Minneapolis, Minn. **EQUIPMENT:** Truco Model B Portable Diamond Drilling Machine with 350 rpm drill motor; Truco Model S Drill Stand with 500 rpm Hand Drill Motor; Truco Tru-Vac® Vacuum Pad; Truco Diamond Drill Bits, surface set, resettable. **JOB:** Drill holes for removal of a section of 13' thick, reinforced concrete wall. Jackhammer noise proved unbearable to patients. Truco equipment did the job with practically no sound, mess or disturbance to hospital routines. Truco Drill Stand (left, above) was anchored to the wall horizontally by a Truco Tru-Vac Vacuum Pad. Truco Model B (right, above) was braced to an I beam by its telescoping center post with shaft extension. 123 holes, 3" and 3½" dia. were drilled in an average of 21 min. each: time varied with amount of reinforcing encountered. Slab weighed 8500 lbs. Savings are so great Truco equipment may pay for itself on a single job or in a single day. Write for new Truco catalog.

MASONRY DRILLING DIVISION

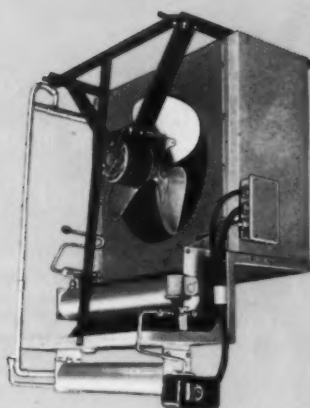
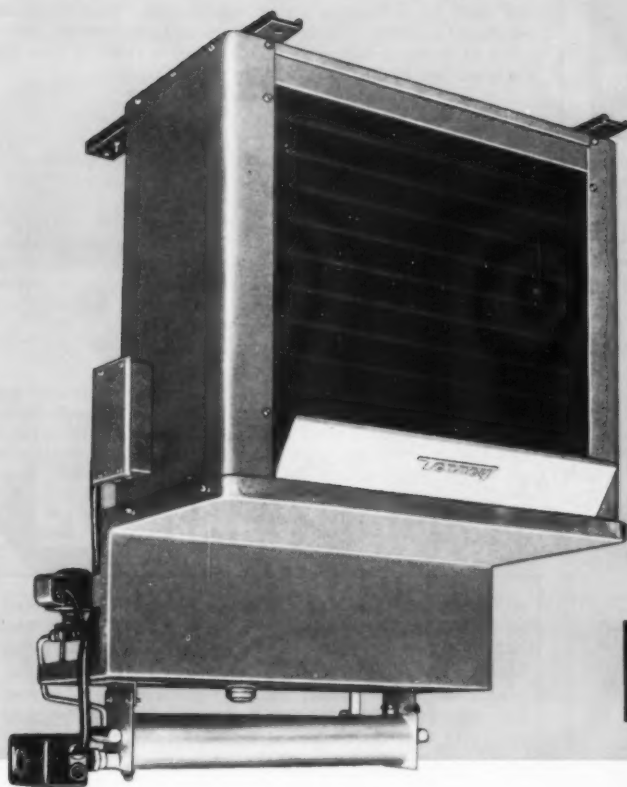
WHEEL TRUEING TOOL COMPANY

211-3200 W. Davison, Detroit 38, Mich. • 575 Langlois, Windsor, Ont.

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SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

TENNEY



"TEH" DEFROST

AUTOMATICALLY
**SEEKS OUT
ALL FROST!**

Tenney's advanced engineering capabilities have produced another refrigeration advance: the TEH Defrostolator that combines the simplicity of electric defrosting with the frost removal efficiency of hot gas.

The TEH is **completely independent** of the condensing unit — it produces hot gas electrically and circulates it by means of a simple cycle that naturally seeks the coldest spot, thus automatically distributing the heat as needed during the defrost process. And the hot gas is produced by the same refrigerant used in normal refrigeration.

No physical relationship exists between compressor and defrost mechanism so there is no restriction on location of condensing unit.

To sum up: electric hot-gas defrost, easy installation, pressure controlled defrost, defrost independent of compressor, completely self-contained defrosting mechanism. For complete details, write today!



Refrigeration, Heating
& Air Conditioning
Products Division

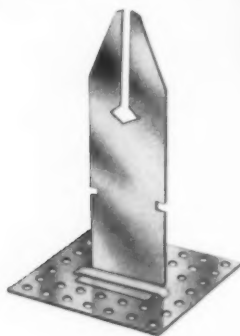
Tenney
ENGINEERING, INC.

1090 SPRINGFIELD ROAD • UNION, NEW JERSEY

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FASTER WAY to apply insulation, helps SHRINE OF THE IMMACULATE CONCEPTION

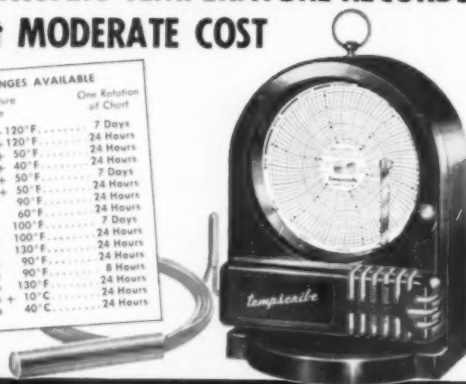


The largest Catholic cathedral in the United States built by John McShain Inc., utilized Stic-Klip Fasteners and Adhesive for insulating its vast heating and air-conditioning duct installation. When insulation materials require fast, labor-saving, positive, permanent anchoring, plus eliminating the necessity of drilling or punching, you can't go wrong by using proven, tested, Stic-Klip Fasteners and Adhesive.

Stic-Klip® MANUFACTURING CO.
54 Regent St., Cambridge 40, Mass.

For Accurate TEMPERATURE RECORDS at MODERATE COST

| RANGES AVAILABLE | |
|-------------------|-----------------------|
| Temperature Range | One Rotation of Chart |
| -30° to +120°F | 7 Days |
| -30° to +120°F | 24 Hours |
| -30° to +50°F | 24 Hours |
| -20° to +40°F | 24 Hours |
| -20° to +50°F | 7 Days |
| -10° to +50°F | 24 Hours |
| -10° to +50°F | 24 Hours |
| 30° to 90°F | 24 Hours |
| 40° to 100°F | 7 Days |
| 40° to 100°F | 24 Hours |
| 50° to 130°F | 24 Hours |
| 60° to 90°F | 8 Hours |
| 60° to 130°F | 24 Hours |
| 70° to 100°F | 24 Hours |
| -25° to +10°C | 24 Hours |
| 5° to 40°C | 24 Hours |



Use TEMPSCRIBE Recorders

BULB-TYPE (illustrated) — For recording temperatures at a distance
BI-METAL TYPE — For recording temperatures in surrounding air

- ✓ Portable—easily carried. Can be set on flat surface or hung on wall.
- ✓ Spring-wound instrument-type clock: 3 standard movements—8 hours, 24 hours or 7 days.
- ✓ Instrument measures 4 1/2" x 5 1/2" x 7 1/2"; uses 4 1/4" diameter charts.
- ✓ Chart graduations easy-to-read; spaced uniformly over full range.
- ✓ Pen and its actuating components are in door. Doors are completely interchangeable to convert to any temperature range, or from bi-metal type to bulb-type.

Also available: (1) Interchangeable door with electro-magnetic armature to record running time of motors, burners, solenoid valves, etc. (2) Two-pen doors for recording temperature and electrical operation on same chart.

Write for Leaflets 786 and 872

BACHARACH INDUSTRIAL INSTRUMENT CO.
200 N. BRADDOCK AVE. • PITTSBURGH 8, PA. T-25

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USEFUL Literature

Continued from page 19

PORTABLE CORE DRILL. Bulletin 27 describes the "Ambassador" drill for drilling or coring concrete, tile, glass, rock, and reinforced masonry. The booklet features 15 application photos, a list of features and specifications, and a chart of thin wall diamond bits by bit size. — *Acker Drill Co., Inc.*

circle 213 on reader service card

INDUSTRIAL CENTRIFUGAL FAN. Catalog 1122 describes the product's high efficiency performance at direct connected motor speeds. The 4-page release has operating features, construction details, and engineering data. Illustrated with photos and drawings, the booklet also discusses the airfoil bladed wheel, the inlet van air spin control, and curves on inlet van control horsepower and on efficiency by volume in percent rated volume. — *Sturtevant Div., Westinghouse Electric Corp.*

circle 214 on reader service card

VALVES. Catalog MV-615 covers the complete line and pictures 74 valves with details, specs, diagrams, and rough dimensions on every valve item produced. More than 12 cutaway drawings and renderings on construction and technical information are included. Six of the brochure's pages contain angle valves; seven pages cover convactor valves. — *Marsh Valve Co.*

circle 215 on reader service card

ALL KINDS OF BUSINESS PROBLEMS. These are discussed in "Profitable Management for Main Street," which also includes a moral for each problem. Operating ratios given for 41 lines of retail trade. Also included is a return envelope for ordering other company publications. For your free copy, write: *Dun & Bradstreet, Inc., Public Relations Div., P.O. Box 803, Church Street Station, New York 8, N.Y.*

DUST SEPARATOR. Bulletin E-221 describes "HV" centrifugal dust separator. The release includes performance data, selection and dimension charts, and installation photos. Multiple groupings of the product are shown, and there's a typical dust recovery curve, a temperature and pressure correction formula, a product selection chart, an air flow resistance curve, and many other supports and accessories tables as well. — *Day Co.*

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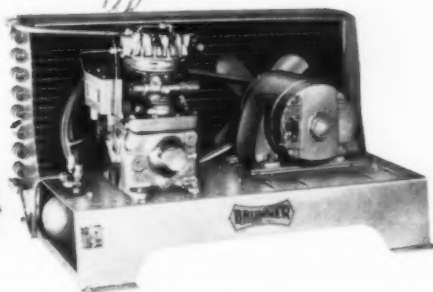
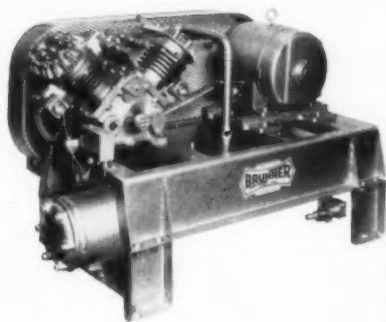
PROPELLER FAN POWER ROOF VENTILATOR. Bulletin DB3-100 supersedes 2303, and has late information, new illustrations, revised dimensions, and other changes including new size L-LSQ489. — *Ilg Electric Ventilating Co.*

circle 217 on reader service card

PACKAGED LIQUID CHILLER. New brochure features direct expansion-type models in sizes from 50 to 125 tons. Included are specifications for compressor, motor, liquid cooler, condenser, control center, unit base, refrigerant piping, performance test, and an optional feature that permits capacity reduction below minimum step of compressor unloading. Other features are product photographs and a chart on five models giving capacity, motor horsepower, overall dimensions, compressor data, refrigerant charge, condenser and cooler dimensions and operating weights. — *York Div., Borg-Warner Corp.*

circle 218 on reader service card

they're Rugged . . .
Reliable . . . Versatile



OPEN TYPE CONDENSING UNITS

**. . . 2 compressors cover
 1½ h.p. to 10 h.p. range**

These sturdy performers offer unequalled flexibility . . . reliably meet the widest range of requirements. Two compressors, for example, can cover the complete range from 1½ H.P. R-12 to 10 H.P. R-22, with all valve plates, pistons, shafts and heads interchangeable. Available also as space-saving rack units.

Brunner open type condensing units have these advantages, too:

- ✓ They're rugged . . . will withstand rough treatment. No need to "baby" the system.
- ✓ They can be rack mounted two-high to conserve space.
- ✓ They're simple to service. And stocks of parts at all Brunner wholesalers assure quick return to operation.
- ✓ Units are suitable for either R-12 or R-22.
- ✓ Adaptable for high, low or commercial applications by simply varying R.P.M. of the compressor.
- ✓ Exact balance of compressor and evaporator can be obtained by R.P.M. selection.
- ✓ There's no system contamination in the event of motor failure.

Wide range of applications include use in supermarkets, warehouses, meat packing plants, food processing plants, industrial processing, etc.

For complete information and specifications,
 request Catalog No. 47.

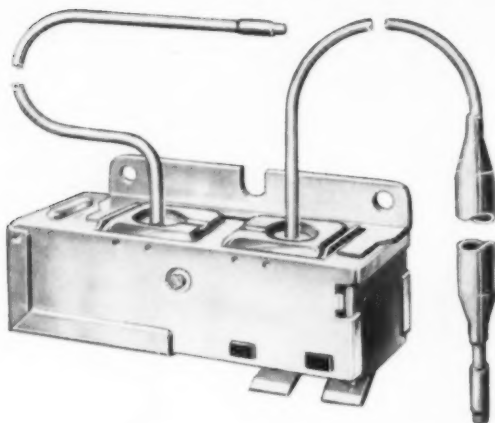
DUNHAM-BUSH

**BRUNNER DIVISION
 DUNHAM-BUSH, INC.**

WEST HARTFORD 10 • CONN. • U.S.A.

circle 23 on reader service card

HEAT PUMP CONTROL IS SIMPLE, EFFICIENT AND AUTOMATIC WITH THESE RANCO CONTROLS



D50 DE-ICER CONTROL—Ranco D50 and D52 De-Icer Controls are the **only** Controls which detect coil ice quickly and automatically. Efficiently simple, they are actuated only by presence of ice on outside coil. Sensing bulb and ambient power element give control at coil. D50 is SPST, D52 is SPDT.

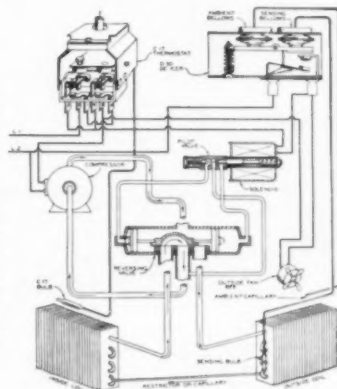


V25 REVERSING VALVE—Ranco V25 and V26 Reversing Valves are slide-type, pressure differential operated. Hermetically constructed with single pilot valve integral with main valve. Special by-pass prevents compressor overload during transfer period. Capacity up through 7½ tons with different valves. Solenoids available in 24, 115, 208, 230 volts with 50 or 60 frequency cycles.

Here is the heart of a heat pump system—controls and valves from Ranco to make operation simple, efficient and automatic in a wide range of climatic conditions. Combine these reversing valves and de-icer controls with a standard cycling thermostat and you give your customers completely automatic, reliable heating-cooling control.

The entire operation is simplicity in itself:

HEATING PHASE: Pilot valve solenoid is energized causing pressure differential to move slide in Ranco Reversing Valve. System operating to remove heat from the outside coil may cause a build-up of ice. As the ice accumulates on outside coil, heat exchange between coil and ambient air is reduced, lowering refrigerant temperature.



DE-ICING PHASE (diagram above): Increase in spread temperature over the clear coil temperature is sensed by the cross ambient bulb to set the Ranco De-Icer Control in action. Temperature drop opens switch to stop fan and de-energizes pilot valve solenoid operating the reversing valve to transfer heat in unit to the outside coil. All ice is removed in 3-5 minutes and coil temperature increases rapidly to close switch that terminates de-icing cycle, starts fan motor and re-energizes solenoid to return unit to heating phase.

COOLING PHASE: Limited vapor charge in ambient air element immobilizes De-Icer Control contacts in closed positions at ambients above 48° F. permitting fan operation through the De-Icer Control. Cooling is thus achieved by the same refrigerant flow as in de-icing and the compressor is operated by temperature demands of the thermostat.



Ranco®
INCORPORATED
COLUMBUS 1, OHIO

More than 100 million Ranco Controls now in use
circle 58 on reader service card

SEPTEMBER 1963/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Service Clinic FOR CONTRACTORS

A MONTHLY TRAINING GUIDE AND REFERENCE FILE FOR YOUR SERVICE DEPARTMENT

Electronic leak detector can mean more service calls, more profits

MR. CONTRACTOR:

Watch for the Service Clinic every month. Its buff-colored pages make it easy to find. Pull out the complete section and pass it on to your installation and service department. The material in this section is especially selected, written, and edited to help these men do a better job.

REFRIGERANT LEAKS in any refrigeration or airconditioning system are a continuing source of trouble. For the owner they mean the repeated annoyance of equipment that isn't performing properly. For the serviceman they mean repeated callbacks and a growing reputation for not being able to keep the equipment in good running order.

The answer to the problem of refrigerant leaks is obvious — find 'em and fix 'em. But often this isn't as simple as it sounds. Many leaks are so small that they don't show up readily, so you just recharge the system with gas and wait for the next call.

There are three common methods for locating leaks of halogen type refrigerants such as R-12, R-22 and R-114:

The bubble test has been in use ever since gas or air has been confined under pressure.

The halide torch has been in use for more than 25 years. It is estimated that more than 100,000 are in use today.

The electronic leak detector was first made available for field service in 1958. Approximately 10,000 are now in use.

To use the bubble test, simply brush or squirt a solution of soap and water or a commercially prepared solution on the areas where leaks are suspected. Escaping gas will cause the solution to bubble. If

Continued on page 66

SERVICE CLINIC FOR CONTRACTORS

bubbles appear quickly, you know that the leak is a large one — probably one that will leak gas at the rate of 20 ounces per year or more. If only one bubble appears each minute, you can figure that the leak rate is about 1 or 2 ounces per year.

Chief advantages of this method of leak detection are that the materials cost very little and you can perform the test even in a combustible atmosphere.

It has many disadvantages, however. Bubbles may appear even when there is no leak, being caused by trapped surface air. And bubbles caused by leaks may form behind tubes or fittings so you can't see them. The bubble test doesn't always detect leaks, even those of significant size. And because it's such a slow process it costs a lot in terms of your valuable time. Even after you find the leak, you have to spend still more time cleaning up the mess.

Main advantages of the halide torch leak detector are its simplicity and its relatively low cost.

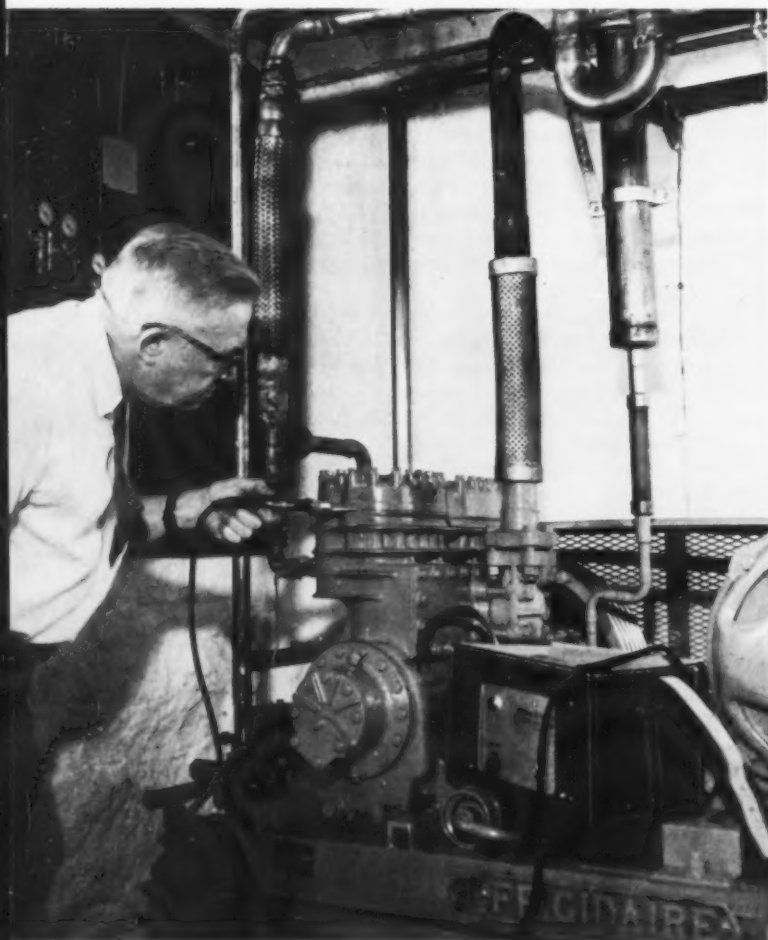
Here's how it works. The gas flame burns in a metal cylinder that is open on one side. A 4 or 5' flexible

tube connects to a metal tube near the bottom of this burner. The chimney effect of the burner draws about 1 cu.in. of air per second through the tube and into the flame.

You use the open end of the flexible tube as a probe. When it passes near a leak, the refrigerant-contaminated air is drawn through the tube to a copper reaction plate and into the flame. If the leak is large enough, the color of the flame fringe will change from blue to green. Sometimes it's a little difficult to keep your eyes on both the probe end of the tube and the flame at the same time.

Sensitivity of the halide torch usually is rated at 100 parts of refrigerant per million parts of air. This means that it can detect a leak of about 9 ounces per year or larger. At least one manufacturer, however, offers a model rated at double this effectiveness (50 parts per million), which means it should be capable of detecting leaks as small as 4.5 ounces per year.

You should not use a halide torch in any areas that are not well ventilated. The flame not only consumes oxygen, but also breaks down the refrigerant into a toxic gas. In a confined area the atmosphere may be so contaminated that the flame will smoke and glow red. If this happens, extinguish the torch immediately.



◀ **SERVICEMAN USES** electronic detector to find leaks in airconditioning compressor.

COMPLETE KIT contains electronic leak detector with proportioning probe, and adjustable leak standard used for calibration. Normally the leak detector is used without removing it from the carrying case.



You won't be able to find leaks under these conditions, and the flame will be producing a considerable amount of toxic gas.

The halide torch type of leak detector, including one 10-cu.ft. tank of gas, costs about \$25. You can use this outfit for about 20 hours before you have to replace the copper reaction plate and get the tank refilled. Cost of recharging generally runs between \$1 and \$2.

A typical electronic leak detector consists of a control unit containing an air pump and a detector which is connected to a 6' flexible tube ending in a transparent probe containing a tiny lamp bulb. You plug the power cord from the control unit into any ac lighting circuit. The pump draws air through the probe at a rate of about $\frac{1}{2}$ -cu.in. per second.

You can move the probe as fast as 2" per second along the seams and over the joints. You only have one thing to look at — the probe tip. When the probe passes near a spot that is leaking refrigerant at a rate of $\frac{1}{2}$ ounce or more per year, the lamp in the probe tip will flash once. A large leak (about 8 ounces or more per year) will cause a double flash.

The detector element is a hot ion emitter and collector. When the air drawn to the detector through the probe contains an increase in the amount of refrigerant gas the ion current increases. This minute current is amplified and lights the probe lamp.

To pinpoint the location of a leak, lift the probe 10 or 15" away from the spot as soon as the lamp flashes. Then use a deliberate touch-lift movement. Touch the probe to the suspected trouble spot for one second, then lift it away for several seconds. If the lamp flashes for each of several spots touched, turn the knob on the control unit to reduce sensitivity until the lamp flashes only when the same spot is touched repeatedly. That's where the leak is.



Each electronic leak detector kit comes with a leak reference for checking the sensitivity, and enough replacement parts to last a year or two of normal use. You have to replace the ion emitter after about every 100 hours of operation. An electronic leak detector like this costs about \$200.

On large installations, where great quantities of refrigerant are involved, leaks in the compressor room are often so big and ventilation in the room is so poor that the atmosphere becomes highly contaminated. This would mean about 100 parts of refrigerant in each million parts of air. Under such conditions, a halide torch will smoke and burn red, and even the regular electronic leak detector will saturate so that it cannot be used.

For this type of service you may need an electronic detector with a proportioning probe. This unit will locate leaks down to about $\frac{1}{2}$ ounce per year in atmosphere with any degree of contamination up to 1000 parts of refrigerant per million parts of air. About 95% of all the air reaching the detector is automatically purified by a built-in filter. The remaining 5% is drawn through the probe tip. When the probe passes near a leak of $\frac{1}{2}$ ounce per year or larger, the lamp will flash. This model leak detector, with proportioning probe and a calibrated leak, costs about \$400.

Now comes the key question. Who needs to spend \$200 or \$400 for an electronic leak detector when other types are available for so much less? The answer is a very practical one. *You do, if:*

- you want to do a better job for your customers, finish each job faster, and work in more calls per day. More calls mean more dollars, and more satisfied customers mean more business.
- you are servicing any automobile airconditioning. These units develop more leaks than conventional equipment because of road shock and vibration. It is important to locate and repair all significant leaks, because loss of 8 or 10 ounces of refrigerant will result in loss of cooling and may damage the compressor.
- you are working on large systems in which loss of refrigerant charge involves a substantial amount of money, both in replacing the gas and in possible loss of product or revenue to the owner.
- you are handling service contracts under which you agree to keep equipment in good operating condition in return for a fixed annual fee. The savings made possible in man-hours of labor and in reduced refrigerant recharging can mean substantially increased profits.

But maybe you're not convinced. Maybe you'd like to try one of these electronic leak detectors before shelling out such a big chunk of your hard-earned money. Or maybe you simply don't feel you can afford it right now. In any case, there is another possibility open to you.

Chances are your airconditioning and refrigeration wholesaler has an electronic leak detector available on a loan or rental basis. Many do. Try it out on some jobs where you think it might be particularly helpful. That's the only way to find out for yourself what it will really do, and how much it would be worth to you in your own service work. ♦

Don't be a packhorse on installation jobs

W. J. OXIER WAS TIRED of making like a packhorse on every installation he tackled. He was a bug on proper evacuation. He insisted on using the proper equipment — vacuum pump, vacuum gage, and the works — but this equipment got mighty heavy when lugging it around to each job.

So Oxier, who is service manager of Shoemaker Bros. Distributors, Inc., Pittsburgh, Pa., designed and built a pump cart especially for this purpose. As you can see in the photos, it's like a little hand truck, with all the necessary evacuation equipment permanently mounted on it.

It worked like a charm. In fact, it worked so well that some Shoemaker dealers who saw it wanted one just like it. So Oxier had his servicemen build some more of these carts in their spare time, and the company sold them to dealers.

In fact, Shoemaker has used the cart effectively in helping new dealers become qualified to make cooling installations. The distributor's servicemen use the cart when helping a new dealer with an installation. Then when the dealer has satisfied Shoemaker that he is a qualified cooling installer, the distributor offers to sell him one of the carts at cost.

Shoemaker also makes the carts available to qualified dealers on a loan basis.

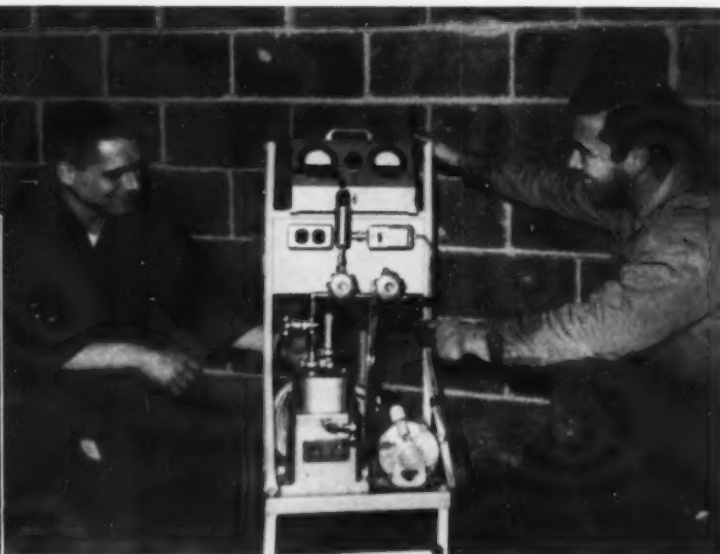
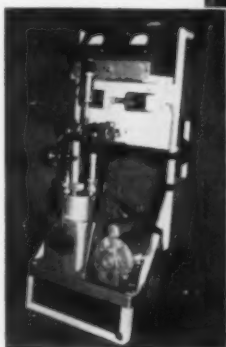
Oxier designed the cart so that it was sturdy enough to hold all the necessary equipment, yet light enough to move about easily. It will roll up and down stairs and fit into tight places. It's a complete evacuation station, just needs to be plugged into the nearest 115-volt electrical circuit.

The cart consists of a tubular frame built on a base holding a vacuum pump of 1½-cu.ft. displacement and a ¼-hp motor. A 115-volt vacuum gage rests on brackets between the handles. A simple plate beneath these brackets forms the back support of the cart. It holds a standard double receptacle, a fuse box equipped with an on-off switch, and a 25' extension cord.

A system of three valves — one master shut-off and two secondary valves — controls the evacuating process.

The cart is 35" high, 20" wide, and 19" deep overall. Fully equipped it weighs 104 lb. It will fit handily into the back seat of a car. Total cost of building it — including pump and motor assembly, gage, and miscellaneous parts — is less than \$400. ♦

ANYBODY CAN BUILD a pump cart like this for evacuating cooling systems, says W. J. Oxier (right). You can make the frame from odds and ends you find around your shop. All joints are brazed. Wiring and valve arrangements are simple.



NEW!

BENDIX-WESTINGHOUSE

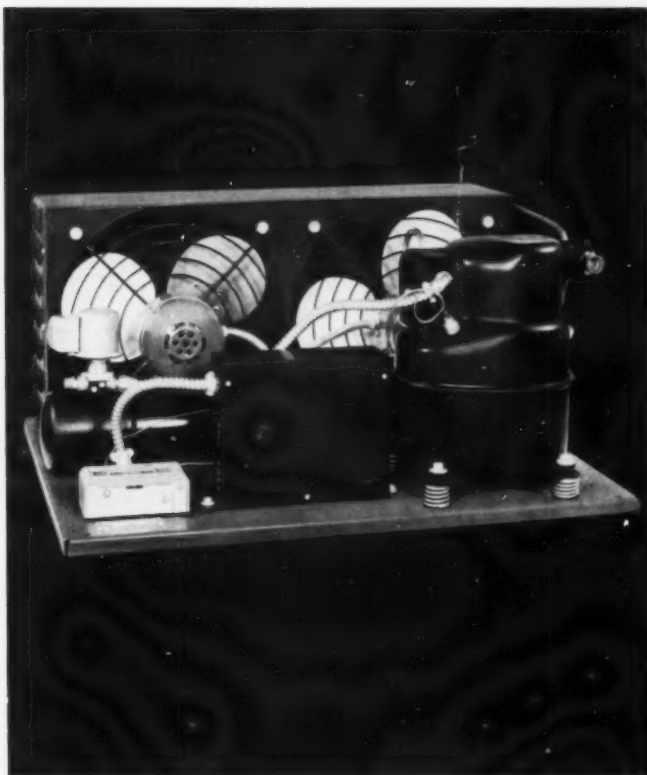
2- AND 3-HP R-12 CONDENSING UNITS

1-PHASE

OR 3-PHASE!

AIR- OR WATER-

COOLED



If you have a high back-pressure application—such as bulk milk coolers, water chillers, walk-in coolers, or air conditioning installations—you'll be particularly interested in the rugged new Bendix-Westinghouse condensing units.

Using R-12 refrigerant, these 2- and 3-hp condensing units are specifically engineered for just such applications. Their two-pole motor compressors save weight over standard four-pole units with the result that shipping costs are lower and required installation space is less.

Other advanced design improvements are many and include: latest-type motor insulation, full suction gas cooling, positive pressure lubrication, and inherent overload protection. They all add up to longer-lasting, quieter, more efficient operation. These units are available in either 230-volt, 60-cycle, 1-phase or 208/220-volt, 60-cycle, 3-phase models—air- or water-cooled.

Free literature on these new economy-minded Bendix-Westinghouse condensing units is yours for the asking. Write . . .

Bendix-Westinghouse

EVANSVILLE, INDIANA

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.; Peter A. Karl, Inc., Union Station Bldg., Utica 2, N. Y.; Sabal-Kielmann, Inc., 15 William St., New York 5, N. Y.

circle 17 on reader service card



Armaflex sheets . . . the better, faster way to insulate large pipes, tanks and vessels

Armaflex sheets are great time-savers in the insulation of large pipes, tanks and vessels from sub-zero to 160F temperatures. Other insulations often require mechanical support, cement or mastic coatings, and expensive vapor-proof finishing. Armaflex sheets do away with these time-consuming steps. The 30" x 36" sheets need only be cut to fit, where necessary, and cemented in place with Armstrong 520 Adhesive. Their foamed plastic composition is an excellent vapor barrier, assuring long service, and their flexibility allows fast and efficient workmanship.

Armaflex sheets are part of a complete line of Armaflex

products that includes Armaflex 22 Pipe Covering, Rigid Armaflex for use where compression is a problem, and Armaflex Finish and Adhesives. The Armaflex line is available through 300 leading wholesalers. For the address of one near you, and for full information on Armaflex insulations, write today to Armstrong Cork Company, 2209 Roth Avenue, Lancaster, Pennsylvania.

ARMAFLEX [®] IS A TRADE-MARK OF ARMSTRONG CORK COMPANY

Armstrong INSULATIONS

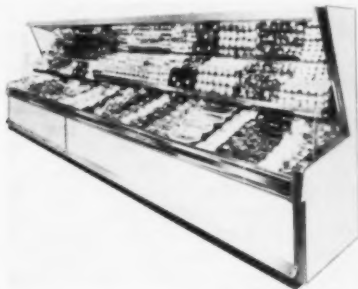
ARMAFLEX 22 • RIGID ARMAFLEX • ARMAFLEX SHEETS • ARMAFLEX FINISH • ARMAFLEX ADHESIVES
circle 14 on reader service card

Product DATA

Continued from page 32

Produce merchandiser

Comes with two refrigerated, adjustable shelves and variety of lighted canopies. Has 18½" upper wall shelf slanted at 11-degree angle and adjustable verti-

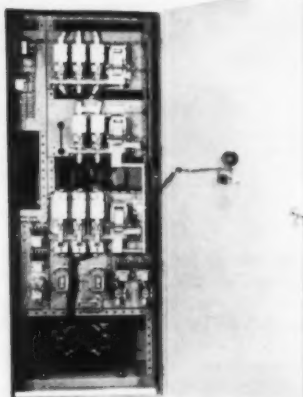


cally besides regular display shelves. Available in rear heights of 67-11/16 and 73½" and with fixed mirror canopy. — McCray Refrigerator Co., Inc.

circle 148 on reader service card

Autotransformer starter

Reduced voltage autotransformer starter for hermetic compressor motors. Is size 6 controller and only 90 x 36 x 28". Small contactors rated at 600 v., 600 amps for either front or rear con-



nections and mounted on steel panel 19¼ x 13¾ x 8". This is more than 50% smaller than conventional contactor and 25% smaller in the starter itself because of small contactors. — Westinghouse Electric Corp.

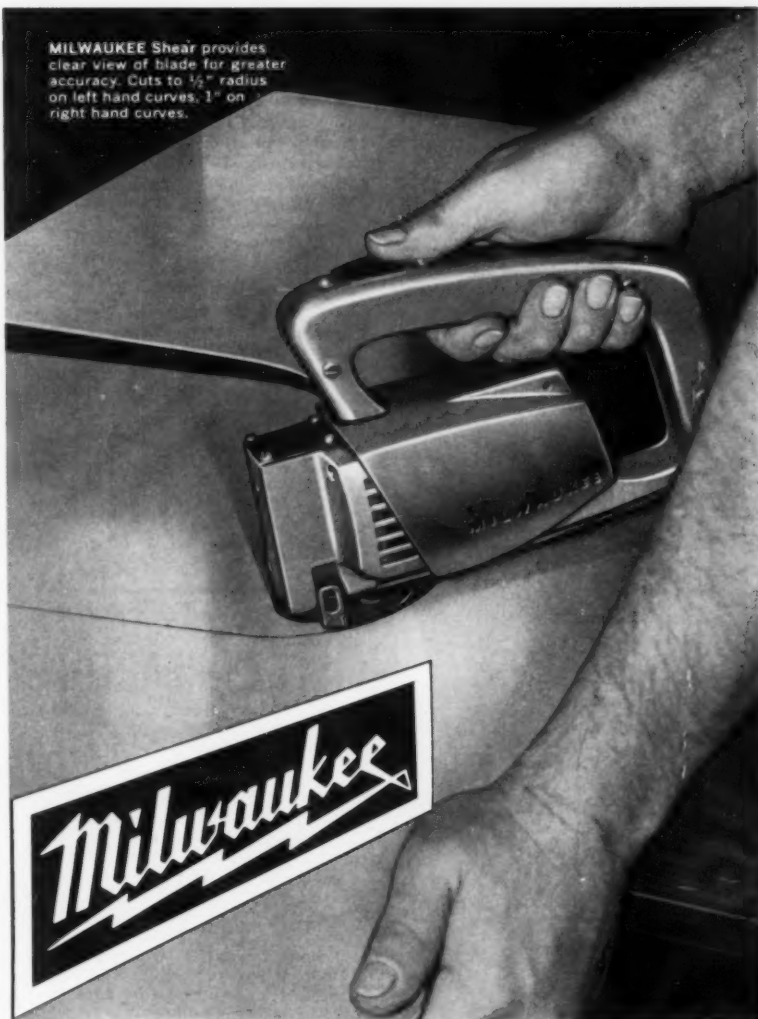
circle 149 on reader service card

Cement mortar additive

"Styrocrete" latex additive for Portland cement mortar can be used to bond "Styrofoam" insulation boards to masonry, cured concrete, metal, other

Continued on page 72

MILWAUKEE Shear provides clear view of blade for greater accuracy. Cuts to ½" radius on left hand curves, 1" on right hand curves.



HEAVY-DUTY

Electric Shear

- ★ Cuts 16 gauge cold rolled steel . . . 17 gauge stainless, galvanized sheet, aluminum and monel metal
- ★ High speed . . . 3800 strokes per minute
- ★ Cuts close curves, right or left . . . won't distort metal
- ★ Handle is forward and low . . . for easy control
- ★ Clear visibility . . . unobstructed line of sight
- ★ Exclusive cutting action
- ★ Weighs only 5¼ lbs. . . perfectly balanced

See your MILWAUKEE Distributor, or send for detailed bulletin SH-1.



look under "tools — electric"



MILWAUKEE ELECTRIC TOOL CORP.
5310 WEST STATE STREET, MILWAUKEE 8, WISCONSIN

circle 49 on reader service card

Product DATA

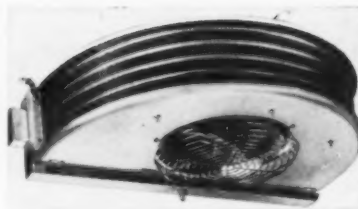
Continued from page 71

surfaces. Latex particles increase mortar adhesion, reduce water and water vapor transmission through mortar, and result in stronger mortar. One 5-gal. pail enough for 3 cu.ft. cement mortar or 200 sq.ft. applied to insulation at 3/16" thickness. — Dow Chemical Co.

circle 150 on reader service card

Redesigned unit cooler

New design of "Half-Round" evaporator permits mounting directly against back wall and ceiling of walk-in coolers. Air drawn in from below and discharged radially in full 180-degree arc. Fan panel hinged to stationary drain trough and drain line permanently installed. Simplified hanger system of slotted hanger makes for easy unit mounting and template for locating mounting holes furnished. Electrical junction box now on outside of cooler. Produced in light sizes with capacities from 2600 to 14,900 Btuh at 10 t.d. Other features: scratch-proof grained aluminum cabinets, rustproof hardware and stainless



steel screws, chrome plated fan-guards, life-lubricated motors with thermal overload protection, and built-in heat exchangers. — Danville Div., Bohn Aluminum & Brass Corp.

circle 151 on reader service card

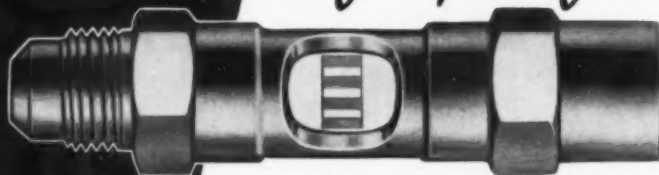
Thousands of
installations
prove

Allin

POSITIVE SEALING LIQUID EYE® INDICATORS
WITH BUILT-IN

MOISTURE-REACTORS

foolproof!



All-in-1

- Leak Proof • Lowest operating cost
- Two viewing ports for visibility from any angle • Positive moisture detection
- Unrestricted full line flow
- Easy to install



The MOISTURE-REACTOR is composed of alternate, permanent and changing (Reactor) color bars. When all the bars appear the same color (green)—it's good—there's no moisture in system.

If moisture enters the system, every other color bar changes from green to yellow—then it's bad—the dehydrator should be replaced. When the system is moisture-free again, the Reactor color bars will change back to their original solid green color.

Simple: IT'S GOOD!or.....IT'S BAD!

No more guesswork about the condition of your R-12 and R-22 refrigerant.

Get it from Your Wholesaler Today

Allin

Manufacturing Company

410 NORTH HERMITAGE AVENUE • CHICAGO 22, ILLINOIS

Over 1,000,000 Liquid Eyes in use today!

circle 7 on reader service card

Winter airconditioning furnace

"Moncrief" gas-fired winter airconditioning furnace (No. SH-50) has 50,000 Btuh input. This brings line to seven capacities to 200,000 Btuh in 25,000 Btuh steps. Measures 12 x 26 x 54". Is preassembled and prewired, and has 16 gage end-welded steel heat exchanger. For multiple dwelling installations where ducted winter cooling with individual temperature control is desirable. Available with belt- or direct-drive blower. Standard 9" belt-drive blower will provide air deliveries to 2 tons against 0.5" water external static pressure. Bottom air intake standard, side air intake with slide-out filter frame optional. — Henry Furnace Co.

circle 152 on reader service card

Mixing box

Single inlet mixing box for interior zones demanding year-round cooling. Temperature control by providing more or less cooling with constant volume of air at all times. When less cooling needed, cool primary air reduced and secondary air induced into primary air stream from ceiling return plenum. Ratio of secondary to primary air adjusted by control motor positioned by temperature-sensitive sensing element in controlled space. — Barber-Colman Co.

circle 153 on reader service card

Valve moisture seal

"Sealzall" moisture seal in sizes up to 1 1/2" for refrigerant valves. Prevents condensation from seeping down be-

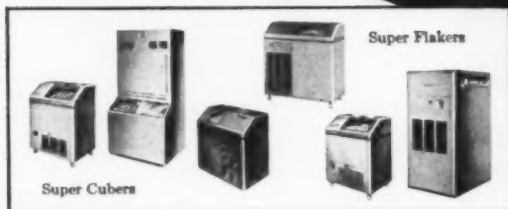


tween stem and bonnet, causing valve freezeup. Is integrated part of valve and doesn't turn with valve opening and closing but remains in position and keeps permanent seal. — Superior Valve & Fittings Co.

circle 154 on reader service card

Continued on page 74

SCOTSMAN ANNOUNCES *90 wonderful days*



FALL ACTION PROGRAM

September . . . October . . . November. For 90 wonderful fall days Scotsman Ice Machines can help you garner extra profits.

Literally hundreds of establishments need Scotsman ice machines. Motels and hotels . . . restaurants . . . fraternal organizations . . . bars and taverns . . . all have sharply increased ice needs in the fall.

Scotsman is set to help its dealers

become 90 day sales wonders with a big, bold advertising and promotional program designed to help you win customers quickly and profitably. You'll have everything you need to become a 90 day sales wonder with Scotsman ice machines.

Mail the coupon below for complete details. Don't miss Scotsman's "90 Wonderful Days" Fall Action Program!

SCOTSMAN®

ICE MACHINES

QUEEN PRODUCTS DIVISION • KING-SEELEY **KST** THERMOS CO.
Albert Lea, Minn.

circle 64 on reader service card

**I'M
INTERESTED!**

☐ Send details on
"90 Wonderful Days"
Fall Action Program

☐ Send data on Scotsman
dealer franchise

Name _____

Address _____

City _____

Zone _____ State _____

Mail to: Queen Products Division,
King-Seeley Thermos Co.,
199 Front Street, Albert Lea, Minn.

Product DATA

Continued from page 72

Hammer-drill

"Roto-Hammer" (Model 726) can hammer without rotary action or drill without hammering. As hammer without rotary action, can chisel, point, or rivet; as drill without hammering, bores holes close to edge of material. Delivers 2400 blows per minute at 500 rpm. Weighs



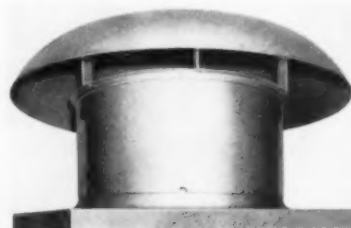
13-3/4 lb. Drills holes from 11/64 to 1 1/2" dia. Comes with depth gage, tool retainer, side handle, hex wrench, oil can, dust shield, steel carrying case. Drilling accessories include fluted carbide-tipped bits for holes 1/2 to 1 1/2" dia. and hollow-

core, carbide-tipped bits for drilling holes 1 1/2 to 1 3/4". Hammering accessories are bull points, chisels, and scaling tools. — Skil Corp.

circle 155 on reader service card

Roof ventilator

Mushroom head roof ventilator available in 24, 28, 36, and 48" sizes with variety of fans in each size. Extra-cost



accessories include wire mesh bird screens and manually- or motor-operated shutters. Provides a rainproof low-silhouette roof unit. — Hartzell Propeller Fan Co.

circle 156 on reader service card

Motor valve

2-way and 3-way (shown) motor valve for fan-coil units (436A Series) controls flow of hot or chilled water in fan-coil units. Employs a motor and



valve disk member. Valve disk overcomes need for screens. Valve made of forged brass. Is compact to facilitate mounting in soil housings. No soldering or flaring or tubing required, and has simple valve-tubing connection. — Erie Mfg. Co.

circle 157 on reader service card

Rooftop airconditioner-heater

For cooling only, heating only, or year-round airconditioning. Models are 11090-00 (7 1/2 tons), 1112-00 (10 tons) 1116-00 (15 tons). Some possible uses — packaged airconditioning, packaged heating and cooling with either heat exchangers or gas-fired furnaces; year-round cooling with remote condensing unit; year-round cooling with two remote condensing units; series of year-round cooling units with one large condensing unit; and outdoor furnace with provision for year-round cooling system later. Has rugged frame design, ample

Continued on page 77

Absolutely Dependable!

THE

WATSCO

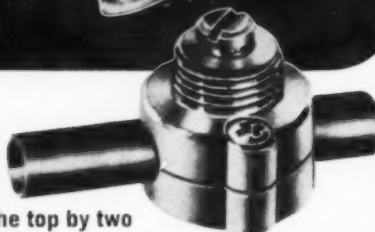
GOLD SEAL

LINE TAP VALVE

Instantly pierces tubing
...to provide a
permanent port for
charging, discharging,
and testing without
refrigerant loss!



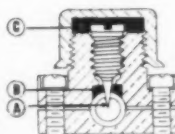
U.S. PAT. NO.
2,827,913



- Small, compact, low cost!
- Taps into any refrigeration line from 3/16" OD to 5/8" OD.
- Secured to tube from the top by two Phillips head screws for greater convenience.
- Engineered to fit respective size line — can't bend or crimp tubing.
- May be installed without refrigerant loss even while unit is operating.

PERFECT "THREE POINT" SEALING

- A** Taper of needle forms first seal
- B** Neoprene seat forms second seal
- C** Seal cap forms third precautionary seal



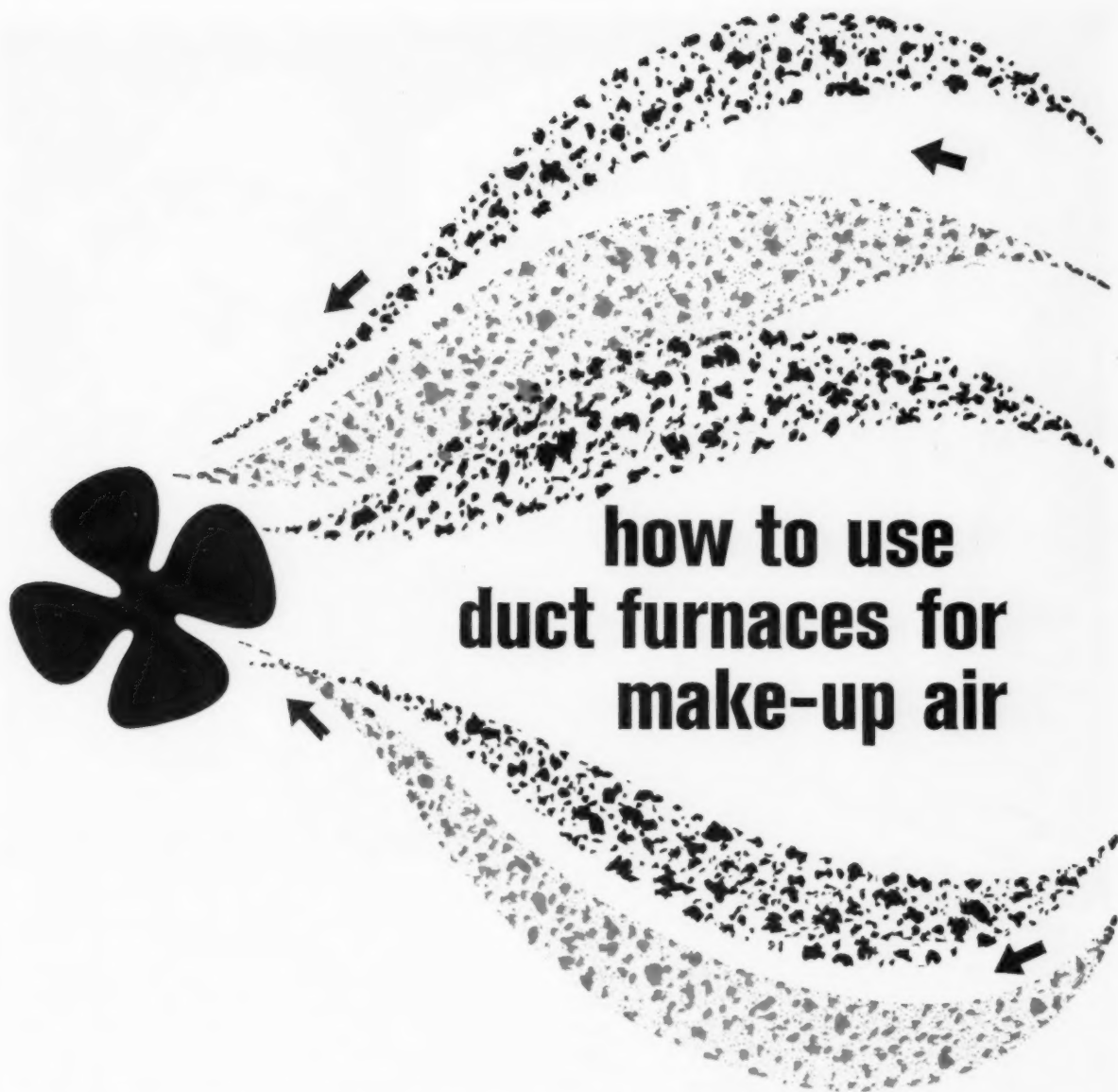
Use with Gold Seal Swivel Control Valve CV-1G or CV-2G.

For additional information, see your wholesaler or write Dept. B-9

WATSCO INC.

1020 EAST 15th STREET, MIAMI, FLORIDA

circle 76 on reader service card



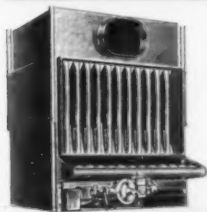
how to use duct furnaces for make-up air

Free from Reznor: Learn about this profitable use of duct furnaces along with other valuable information on make-up air in our just published handbook "What to Consider in Designing Make-Up Air Systems."

Manufacturing plants, chemical, food and material processors, restaurants, bakeries and dry cleaners are becoming increasingly aware of the need for make-up air. They now realize that bringing in clean, heated replacement air through a duct furnace can prevent undesirable

drafts and the infiltration of dust, dirt and fumes.

Reznor's handbook on make-up air is one of a new series of Reznor Heating Handbooks to help you solve commercial and industrial heating problems. For your copy, published by the world's largest manufacturer of gas unit heaters, fill in the coupon and mail to Reznor. Or, for more information, call your Reznor distributor or nearby Reznor district office listed in the Yellow Pages under "Heaters—Unit."



REZNOR HEATERS

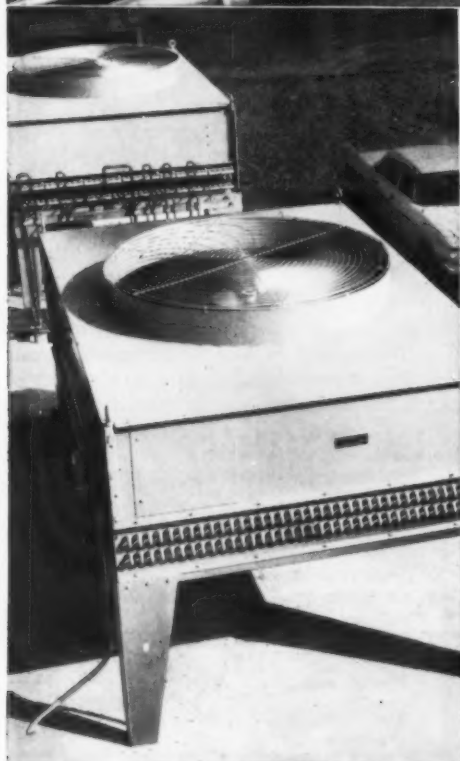
REZNOR MANUFACTURING COMPANY
Dept. RAC-9, Mercer, Pennsylvania
Send me a copy of "What to Consider in
Designing Make-Up Air Systems."



name _____ title _____
company _____
address _____
city _____ state _____

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**"Here's why I'm sticking
with H&M air-cooled
condensers**



***... H&M's Limitrol valve
lets you use them year-round!"***

"Many of my air conditioning and refrigeration systems have to operate 12 months a year. But cold weather used to raise cain with compressor-condenser balance.

"Then I learned that Halstead & Mitchell had a Limitrol pressure modulating valve that adjusts their air-cooled condenser capacity to compressor head pressure, whatever the outside temperature. What's more, H&M gives me multiple circuiting at no extra cost!"

You'd do well, too, to standardize on H&M Air-Cooled Condensers. There are propeller fan models with vertical or horizontal air discharge, and centrifugal fan models for inside installation with ductwork. Capacities of 5 to 100 tons.

Want more information? Call your parts wholesaler or write for Bulletin AC-102. Halstead & Mitchell Co., Bessemer Building, Pittsburgh 22, Pa.

Air-Cooled Condensers • Air Handlers and Coils • Cooling Towers • Water-Cooled Condensers
Export Representatives: Sabal-Kielmann, Inc., 15 William St., New York 5, N.Y.



Halstead & Mitchell

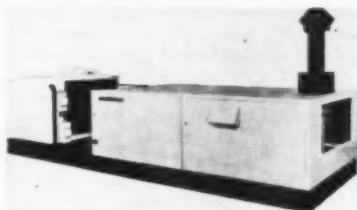
circle 32 on reader service card

SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Product DATA

Continued from page 74

fan capacity, factory-wired control panels and disconnect switches, clogged filter signal light, duct flanges for easy



connection to multiple outlet air distribution systems. — Airtemp Div., Chrysler Corp.

circle 158 on reader service card

Adhesive compound

"Adhesive No. 2" adhesive compound of reclaimed rubber base has immediate grab and long tack range. For temperatures from -20 to 200 F. For bonding light and medium density glass fiber insulation to metal surfaces. Also for bonding rubber to wood, cloth to foun-

dation surfaces, honeycomb paper to wood or metal, polystyrene foams to aluminum. Flows thin and can be applied with brush or sprayed on. In 1- and 5-gal. containers. Brush coverage is 225-250 sq.ft. per gallon; spray coverage, 250-275 sq.ft. — Arno Adhesive Tapes, Inc.

circle 159 on reader service card

Replacement filter

Can be cut to fit almost any make or model cooling unit, and can be trimmed with scissors. Measures $\frac{1}{4}$ x 24 x 11 $\frac{1}{2}$ " new. Will trap most airborne dust, bacteria, pollen and special chemical prevents bacteria growth in trapped particles. Spongelike in appearance, may be removed and washed with water. — General Electric Co.

circle 160 on reader service card

Globe valve

Among possible applications: provide zone control of steam or hot water heating systems; flow control of steam, water, oil, or air; control of liquid levels; maintenance of desired pressure conditions; automatic control of complete process on time or program basis. Lifetime-lubricated gearmotor operator opens valve against rated line pressure without limitations of pressure imbalance. Models available for pressures up to 150 psi. Powered by continuous motor

Continued on page 78

DO YOU SELL ICE MACHINES?

Here's how **Follett** can help you:

NEW 1961 LITERATURE with proven method of choosing most efficient, most economical ice machine—storage bin combination.

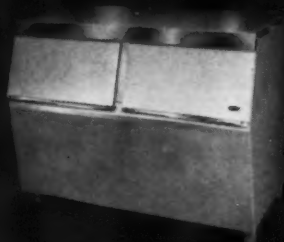
READY FOR DELIVERY—every size Follett bin in stock ready for immediate shipment from our distributors.

FOLLETT QUALITY—best construction and design on the market give trouble-free longtime service.

FOLLETT
ICE STORAGE BINS

Capacities from 250 to 5,000 pounds

MODEL NO. 50



for information and literature write:

ROY FOLLETT CORPORATION

99 Broad Street, Phillipsburg, N.J. Phone GL 4-8511

Dept. 1009

circle 27 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/SEPTEMBER 1961

**P
R
E
V
E
N
T**



**STUCK
PUMPS!**

**GET USE PROVEN
PUMP AID**

with New, Improved Features.

1. A new **RUST INHIBITOR** . . . which **VAPORIZES** and reaches into the smallest crevices.
2. **CONTROLLED FOAM ACTION** . . . provides full seasonal protection without foam at start up time.

Now is the time to prevent stuck pumps . . . eliminate consuming repairs next spring. After draining pump, simply inject **PUMP AID** into pump housing through drain hole. Aerosol packaged **PUMP AID E-X-P-A-N-D-S** to cover all interior surfaces. At start-up time — just throw the switch and your pump is running. **PUMP AID** is water soluble and washes away. May be used in any make or model pump.



PUMP AID . . . PREVENTS CORROSION • PRESERVES SEALS • WILL NOT FREEZE • WILL NOT EVAPORATE • IS WATER SOLUBLE • IS NOT TOXIC • IS EASY TO USE • IS REASONABLY PRICED

Order by the case of twelve cans today from your dealer and be prepared when shut-down time comes.

Or write . . .

THE GARMAN CO.
1253 GROVER RD.
ST. LOUIS 25, MO.

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MORE SERVICEMEN PREFER MADDEN



**BEST BUY
FOR THE
MONEY**

**1 VALVE
PIERCES
4 TUBE
SIZES!**

HP-41

3/16" | 1/4" | 5/16" | 3/8"

**DVO-TEST QUICK COUPLER
CHARGING LINES**

3/6" flexible line. Quick
Coupler elbow on one
end. Color coded in
sets.



Stocked by leading wholesalers everywhere



**MADDEN BRASS PRODUCTS
COMPANY**
AURORA 2, ILLINOIS, U.S.A.
EXPORT: AD AURIEMA, INC.
85 BROAD ST., New York, N. Y.

Product DATA

Continued from page 77

shaded pole, and all gears of machined hardened steel. Cam arrangement and valve body eliminates problems as adjustable linkage. Automatically compen-



sates for disc wear as valve reseats itself for positive shutoff. Non-critical of mounting angle, valve operates in any position not more than 90 degrees from vertical. In sizes from 1/2 to 3", either 32 or 139 sec. timing cycle, and in 24, 120,

or 240 v. Externally mounted auxiliary switch adaptable to line or low voltage installation is optional. — White-Rodgers Co.

circle 161 on reader service card

Skid trucks

Line of three skid trucks with capacities of 1100, 2400, and 4800 lb. "Speedy Zero" 1100-lb. model has 5-1/2" lowered height, 2" mechanical lift in one stroke, and 18 x 40" platform and rubber-tired wheels. The "L" Series (2400 lb.) has 2" mechanical lift, hydraulically-controlled lowering, and 7" dia. forged steel wheels. The "H" Series (4800 lb.) has hand-operated 2 1/2" multi-stroke hydraulic lift and lowering and 7" dia. forged steel wheels. Last two series available with optional rubber, nylon, polyurethane, or aluminum wheels. Also optional with these models is welded solid platform fabricated from medium pattern steel safety plate. — Stokvis Multiton Corp.

circle 162 on reader service card

Central system control kit

"Climate Center" control panel kit for central residential airconditioning system which regulates indoor temperatures, reports outdoor weather conditions, and flashes warning in case of equipment failure. Kit includes 15' sheathed color-

Continued on page 81



When you specify AIRSERCO PRODUCTS you are buying "THE STANDARD OF THE INDUSTRY" in ...

- TESTING INSTRUMENTS
- PRECISION VISUAL MEASURING EQUIPMENT
- HIGH VACUUM PUMPS, GAUGES, AND ACCESSORIES

Airserco is the "complete line" from a test cord to a full production line facility.



Hold on to your Profits! use AIRSERCO

Air Conditioning and Refrigeration
TESTING
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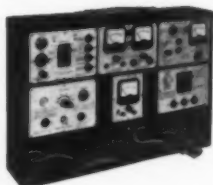
Portable
Recording
Voltmeter



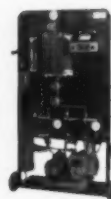
Relay
Tester



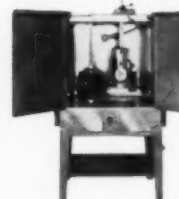
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Hermetic
Compressor Analyzer



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Hermetic
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Descale

**cooling towers,
evaporative condensers,
ice-making machines**

**easily, more safely with
non-fuming Dry Acid Cleaners
based on Du Pont Sulfamic Acid**

EASIER TO USE

Just scoop dry acid cleaners from lightweight, disposable drums into make-up tank. Often can be added directly to equipment . . . no elaborate apparatus required.

SAFER TO HANDLE

These cleaners are dry, non-fuming powders. No danger of spilled or spattered liquids. No danger of corrosive or toxic fumes spreading throughout the building during servicing.

ECONOMICAL

1 lb. of dry acid cleaner does the job of 1.5 lbs. of hydrochloric acid. You'll save on shipping, handling and storage costs.

LESS CORROSIVE

Sulfamic acid is less corrosive than hydrochloric acid; on brass, 60% less; on steel—70%; copper—85%; aluminum—80%. And, with the proper inhibitor, it can be used safely on galvanized steel.

*for more
information,*
mail coupon for free booklet
and names of formulators
who offer these compounds



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INDUSTRIAL & BIOCHEMICALS DEPARTMENT, N-2545 R
WILMINGTON 98, DELAWARE**

Please send me ☐ quick-facts bulletin on Dry Acid Cleaners;
☐ names of formulators offering cleaners based on sulfamic acid.

Name

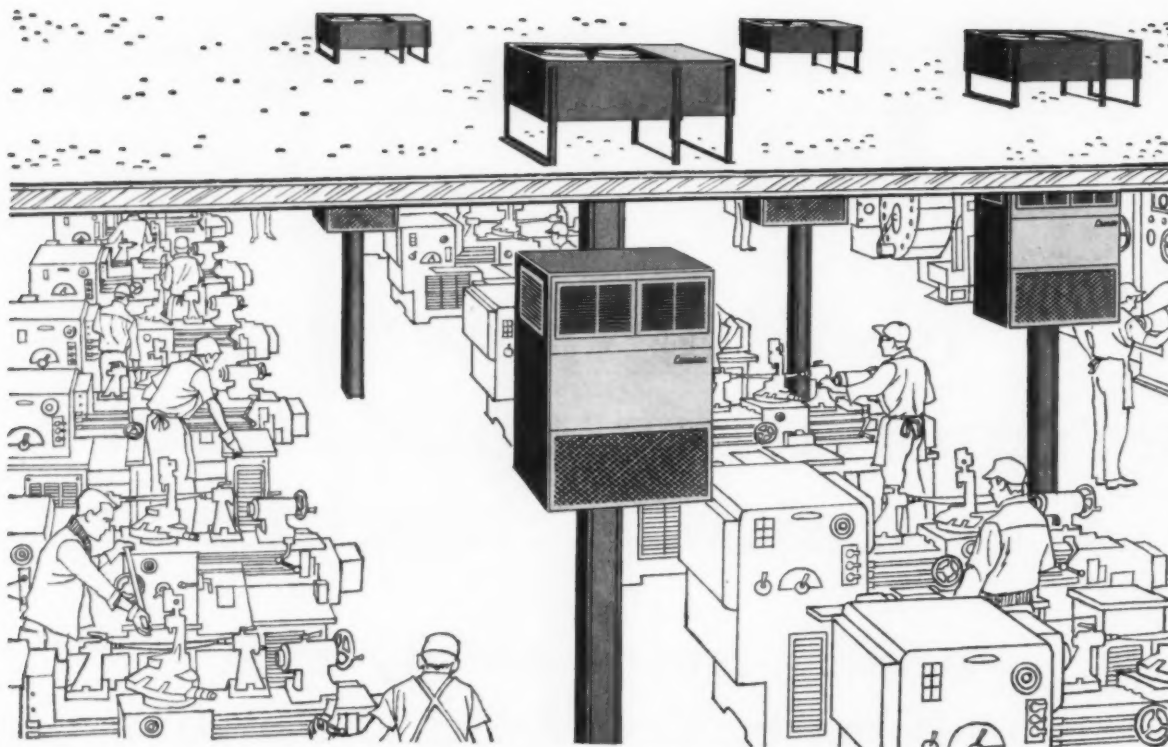
Company

Address

City State



circle 25 on reader service card



Typical installation: Outdoor sections on the roof; indoor sections hung on columns.

New Carrier Heat Pump Weathermakers are practical even in colder climates

For your prospects who plan to build a new plant, or replace their present heating system, the Carrier Heat Pump Weathermaker* offers you a real profit potential—even in colder climates. Here's why. It is no longer true that climate is a deterrent to choosing a heat pump. The improved designs of these all-electric Weathermakers combined with the heat load from concentrations of light, machinery and people in industrial applications now make it possible to operate heat pumps as economically in colder climates as many types of conventional systems.

Besides operating economies, these heat pumps are space savers, too. The indoor sections of these versatile Carrier units may be suspended from the ceiling, hung on the walls, or they may stand on the floor. The arrangement shown above is for a one-story plant of about 30,000 square feet. The indoor sections are hung on columns to allow the freedom of four-way air discharge; the outdoor sections are installed on the

roof. Other arrangements can be tailored to your own particular requirements.

There are other dividends as well. Because it is all electric, soot, smoke, flame, fuel lines and storage tanks are eliminated from the heating system. Because it is also air-cooled, it requires no plumbing, water, or water towers. Because it is a one-system heating-and-cooling package, maintenance costs are cut. Fewer moving parts mean less servicing. And because a Carrier Heat Pump Weathermaker operates year-round, the normal expense resulting from seasonal startups and shutdowns is eliminated entirely.

Carrier manufactures a complete series of packaged heat pumps in addition to other air conditioning equipment. For complete details about the line, call your Carrier distributor...you'll find him listed in the Yellow Pages. Or write Carrier Air Conditioning Company, Syracuse 1, New York.

*Reg. U. S. Pat. Off.

Carrier Air Conditioning Company

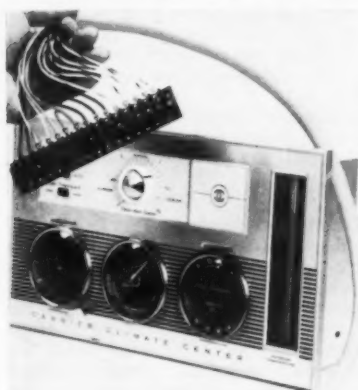
circle 19 on reader service card

SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Product DATA

Continued from page 78

coded cable with pushon connectors on one end and numbered terminal strip on other. Strip, which separates to identify connecting wires, can be close



to equipment. A 20' capillary tube from outdoors to panel sheathed in flexible wire braided sleeve. Brackets for mounting plaster box to wall studs eliminate shimming — Carrier Air Conditioning Co., Div., Carrier Corp.

circle 163 on reader service card

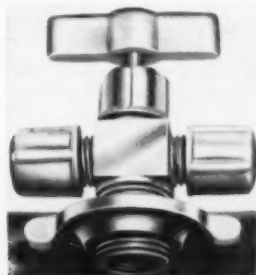
Furnace filter

"Amer-glas" color-coded glass fiber furnace filter. Customer needs only to know color of filter label, not size of filter. Green label: 16 x 20 x 1"; orange label: 20 x 25 x 1"; red label: 20 x 20 x 1"; blue label: 16 x 25 x 1"; yellow label: all other sizes. Filters are hexachlorophene-treated to fight bacteria. "Dense pack" filtering media, spun with progressing density from one side to the other, has big dust-holding capacity. — American Air Filter Co., Inc.

circle 164 on reader service card

Can tapping valve

"Twin Port" can tapping valve makes possible connection of gage and charging line in series to any number of packaged refrigerant containers to eliminate charging manifold. Two sealing caps included when one or both ports



to be closed off. Is of 1-piece plastic. Steel needle and shaft in one piece so needle can't loosen and fall out. Easy-grip plastic "T" handle also can't twist off or loosen. Packaged in plastic pouch with snap lock to protect valve's threads and to carry other small parts. — Wat-sco, Inc.

circle 165 on reader service card

Storage rack kit

Series 4000 "Build-A-Rack" requires no special tools, no cutting. Yields no scrap. Fabricated for all-galvanized steel formed channels with upright capacity of 10,600 lb. and overall height of 12'. Beam capacities available to 4200 lb.

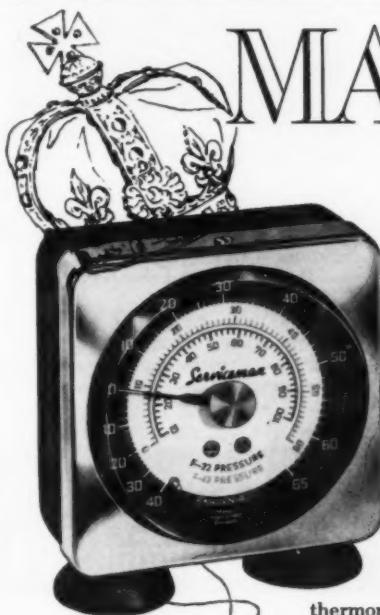
for each pair of shelves to span of 8'. For use as pallet rack or heavy duty shelving, has 1.65 safety factor over yield. — Paltier Corp.

circle 166 on reader service card

Meat chiller

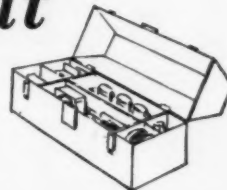
To meet special refrigeration and high humidity conditions of carcass chilling rooms. Has galvanized construction and totally enclosed motors for protection against corrosion and condensation. Insulated drain pan separated from side panels catches condensation which runs down sides of unit. Available for recirculating ammonia systems with capacity

Continued on page 82



Also available in Standard Model with single scale.

MASTER of the service kit



Field comments confirm our feeling that anything and everything worth having in a refrigeration thermometer has been designed into the Marsh "Serviceman"—truly master of all it surveys.

Users appreciate such royal Marsh features as the easy reeling five foot tubing with conveniently positioned bulb clip; spiral spring to guard against tube crimp; permanently leak tight bourdon tube; easily accessible "Recalibrator" screw; and the Marsh heritage for accuracy and durability.

And the Serviceman thermometer has looks, too! The easy-to-read precision dial also indicates Refrigerant-12 and -22 pressures on contrasting color scales and is regally set-off by a bright chrome bezel on an iridescent gun metal case—fully protected by a scratch-proof, forever clear Lucite crystal.

Available in two ranges: —10 to 100° F. and —40 to 65° F. The De Luxe Serviceman thermometer is the surest way to test thermostats, brine tanks and refrigerators. Put one in your service kit today!

See Your Jobber!

MARSH INSTRUMENT COMPANY, Dept. P, Skokie, Ill. Division of Colorado Oil and Gas Corporation • Marsh Instrument & Valve Co. (Canada) Ltd., 8407 103 St., Edmonton, Alberta • Houston Branch Plant, 1121 Rothwell St., Sect. 15, Houston, Texas • Eastern Seaboard Warehouse: Marsh Instrument Co., 1209 Anderson Ave., Fort Lee, N.J.

MARSH

Refrigeration Instruments

Gauges • Thermometers • Valves

circle 46 on reader service card

circle 12 on reader service card



Keep air-conditioning and refrigeration units operating at peak efficiency by preventing the formation of rust and scale in condenser tubes and circulating lines. ANCO keeps lines open and free from destructive build-up, sludge stays fluid for easy removal. In self-feeding cans for convenient use.



- Inexpensive
- Safe for metals
- Prevents rust, pitting and scale
- Added protection for towers

Buy ANCO for sure profits

Condenser Cleaner
Water Treatment • Algicide

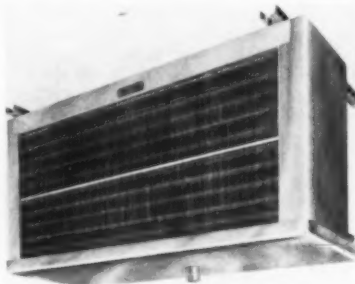


Anderson
Chemical Company, Inc.
Box 1424 • Macon, Georgia

Product DATA

Continued from page 81

up to 75,000 Btuh at 10 t.d. and for flooded ammonia or direct expansion R-12 and R-22 up to 60,000 Btuh at



10 t.d. Ammonia units may be field-piped for water defrost or hot gas defrost; R-12 and R-22 units equipped for water defrost. — Recoil Corp.

circle 167 on reader service card

Low pressure nozzle

One-piece nozzle for high capacity, low pressure installations, made with $\frac{1}{4}$ "

male pipe thread. Nine models cover capacity range of 2 to 8 gpm at 40 psi. Spray pattern of each is 80-degree hollow cone. Adaptable to multiple header installations in air washers, cooling towers, gas cooling. Available in brass, teflon, other machineable materials. Employs whirl principle of spray generation. — Bete Fog Nozzle, Inc.

circle 168 on reader service card

Pipe wrench

"Gripso-Matic" lightweight pipe wrench that quickly adjusts to any pipe size and can be snapped closed when not in use. Spring-loaded ratchet locking device inside handle and hook calibrated from $\frac{1}{2}$ to 2" so user can set wrench in advance. Available in 6, 8, 10, 14" sizes. — Standard Fittings Co.

circle 169 on reader service card

Room thermostat

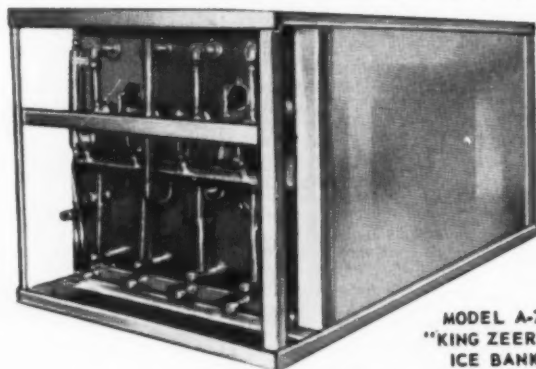
Room thermostat equipped with positive snap-action switch with multiple contacts, low mass bi-metal actuator for sensitive control, and adjustable heater for all primary control systems. Single pole, single throw switching arrangement and low operating voltage of 20 to 30 v. ac also featured. Heater adjustable from 0.3 to 0.9 amps. Thermal range is 50 to 90 F with differential of 1.5 F. — Taco Heaters, Inc.

circle 170 on reader service card

Continued on page 85

Add a "King Zeero" ICE BANK to Your Refrigerating System for Effectual, Economical Air Conditioning

The "King Zeero" ICE BANK is designed to deliver 32° to 34°F. ice water for recirculation through air cooling coils in exactly the right amount when and where it is needed. It levels off "peak" and "valley" loads. Peak loads many times compressor capacity are easily handled. Ice Banks may be added to increase existing capacity. Refrigerant: Freon, Methyl Chloride or Ammonia.



MODEL A-7
"KING ZEERO"
ICE BANK

CAPACITIES - 500 lbs. to 30,000 lbs. (72,000 B.T.U.'s to 4,320,000 B.T.U.'s) in a single unit. Multiple units may be installed.

The Patented Coils with Built-in Louvres opposed to the flow of water through the ICE BANK provide turbulence. This eliminates a mechanical agitator - insures all the water rubbing all of the ice. No upkeep or repair expense whatever.

The "King Zeero" Ice Storage System of water chilling has definite advantages over direct expansion, or other types of ice accumulators.

Saves power through smaller compressor requirement. Simple construction (no moving parts). Dependable in performance. Low operating and costs.

Let the ice stored during light loads take care of peak loads. The compressor need only handle the average daily load - not the peak.

THE KING ZEERO COMPANY

4300-14 W. Montrose Ave. - Chicago 41, Ill.

Manufacturers of Ice Builders - Ice Builder Cabinets - Ice Banks

circle 37 on reader service card



now insulate warehouses with an amazing material that never breaks down

Most refrigerated warehouses work fine—for awhile. But often their insulation begins to break down . . . soak up moisture, warp or shrink, and pull away from wall surfaces. Owners soon discover they can't maintain specific cold storage temperatures. Many cost-conscious firms, like L. M. Sandler & Sons Frozen Foods, have switched to insulation board made from remarkable DYLITE® expandable polystyrene. Its moisture resistance, rigidity and lasting, low "K" Factor make DYLITE an unmatched low temperature insulator. This rigid foam plastic has a tight, closed-cell structure that can't breathe.

The L. M. Sandler warehouse normally holds temperatures at -10°F . Two layers of 4" DYLITE board insulate the inside walls. Another 8" cover the corrugated steel sub-roofing and 5" lay under the concrete floor. There's more storage room because DYLITE board takes up less space. Insulation board of DYLITE is lightweight, yet strong enough to place under heavily-used floors. It bonds easily to wall surfaces; won't sag, warp, pull away or absorb odors. You can cut, shape and position it easily.

For additional information on insulation board made of DYLITE expandable polystyrene, write Koppers Company, Inc., Plastics Division, Dept. 1527, Pittsburgh 19, Pennsylvania.

Board used here is Gen-A-Lite by General Foam Plastics, Portsmouth, Va.

KOPPERS PLASTICS

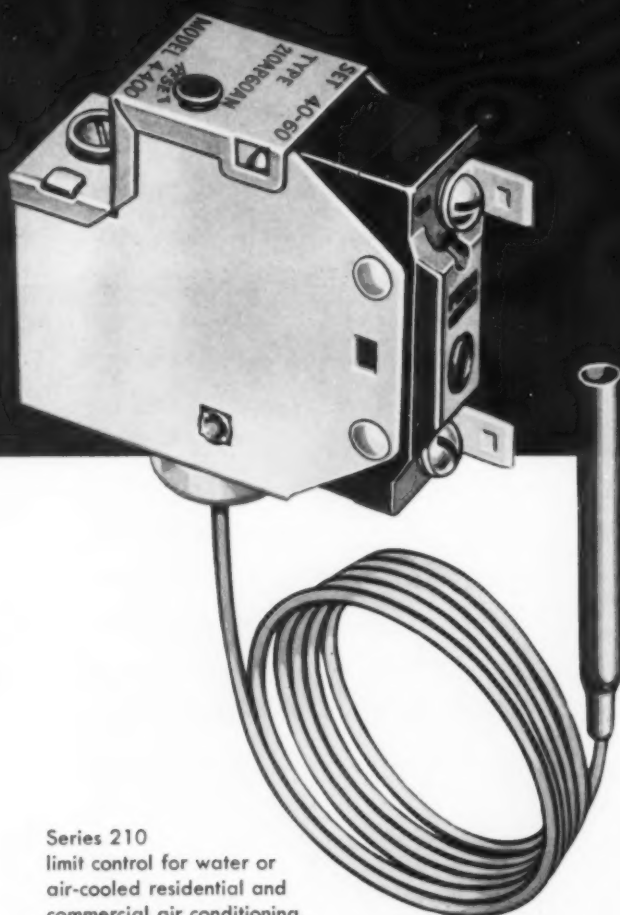


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NOW! NO MORE WAITING

Service men...
● here's the
best news ever!

your wholesaler
has limit controls
for replacement
on all packaged
air conditioning



Series 210
limit control for water or
air-cooled residential and
commercial air conditioning.

Penn universal replacements help you give immediate service

Now . . . Penn's Series 210 limit control, widely-used by manufacturers of packaged residential and commercial air conditioning, *is available for field replacement.* And, with its adjustable pressure range, it will fit the specifications of any air conditioner manufacturer.

No more waiting . . . no more disgruntled customers . . . simply go to your wholesaler and get immediately the correct replacement for the high or low limit control. Your wholesaler has a handy Penn cross-reference chart which makes proper selection fast and easy.

Remember, to give your customers prompt service . . . go to your wholesaler and ask for the Penn Series 210 limit control.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N. Y.

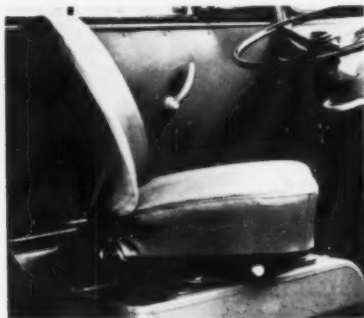
AUTOMATIC CONTROLS FOR HEATING REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Product DATA

Continued from page 82

Truck swivel seat

Swivel seat for trucks that gives drivers access to 170 cu.ft. load compartment of firm's panel trucks. Reduces operator fatigue by eliminating need to

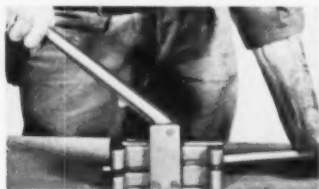


leave cab through street-side door and step into traffic on deliveries. Because of seats, trucks can also carry long cargoes as extension ladders and pipes by running them through rear doors forward to truck's front walls. — Volkswagen of America, Inc.

circle 171 on reader service card

Pipe tools

No. 1803 pipe holder keeps pipe level and parallel with hydraulic bender shoes and pipe supports throughout bending operation. Clamps quickly to each end of pipe and fits pipe sizes from



1½ to 4" dia. No. 1810 hand pipe bender (shown) makes offset bends in ½" tubing. Both bends formed simultaneously by pressing down on handle. — Greenlee Tool Co.

circle 172 on reader service card

Shaded-pole motor

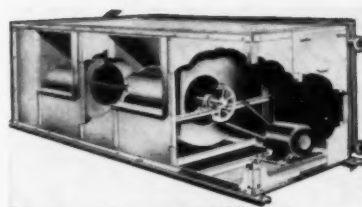
All-angle 4 and 5" dia. shaded-pole motor with integral insulation and improved bearing lubrication. The 11- and 21-frame motors utilize forced-oil lubrication system that recirculates, refilters, and recools oil for top bearing life. Three types of felt wicks protect against oil seepage and assure uniform oil supply. Insulation system, which has a resin that fuses laminated stator core into integrated unit, cuts problem of wound-under wires. Motor's 1-piece

cast shell and bearing housing dampens vibration and minimizes magnetic and frequency pulsations. In ratings from 15 millihorsepower to 1/10 hp, 60 cycles, 115 to 230 v. Some accessories: resilient bases, connectors, mounting studs, latches, and conduit boxes. — General Electric Co.

circle 173 on reader service card

Air handling unit

"FAM" horizontal-vertical series of 1- and 2-fan air handling units in 500 to 35,000 cfm range. Models 108 through 116 and 208 through 230 carry weights from 295 to 3200 lb. Finished in



semi-gloss green enamel, uses 1 lb. density black neoprene-coated glass fiber insulation. Modular construction allows fan sections to be field rotated. Design of fans forward curved with cast-iron center hub. Variable pitch motor

Continued on page 86

Here's where to find the refrigerator door gasket you need

Use Jarrow Door Gaskets for . . .

- COLD STORAGE DOORS
- WALK-IN FREEZERS
- COMMERCIAL REFRIGERATORS
- TRUCK BODIES
- ALL APPLICATIONS WHERE A DOOR GASKET IS REQUIRED

You'll want to keep this Jarrow catalog handy for quick reference on every gasket problem. And Jarrow's over a third of a century of gasket experience is your assurance of the most advanced engineering knowledge . . . finest quality products. Fast service from your local Jarrow wholesaler's stock. Write for your own copy of Catalog C-301a.

JARROW PRODUCTS
1240 W. Fullerton Ave. • Chicago 14, Illinois

circle 36 on reader service card

Product DATA

Continued from page 85

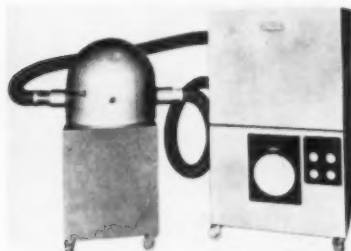
drive provided on motors through 7½ hp. All sheaves case semi-steel. Heavy duty V-belts sized for 150% bhp, and 1750-rpm drip-proof motors standard. Heavy channels serve as shipping channels and as part of the suspension. Motors inside unit and full-entry access door provided.

— Drayer-Hanson Div., Hi-Press Air Conditioning of America, Inc.

circle 174 on reader service card

Environmental chamber

Portable environmental chamber (Model W-2) for use on components



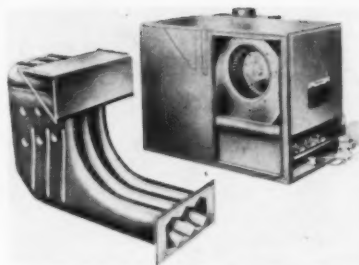
and products undergoing vibration or shaker tests and other tests where impractical to bring item to chamber. A 19" dia. insulated dome, connected to chamber with two flexible insulated hoses, fits over item. Temperature range from -100 to 200 F with pulldown from maximum to minimum temperatures in 45 minutes. Internal air circulation assures zero stratification throughout entire range. Available with other temperature ranges and hood styles with air- or water-cooled condensing units.

— Webber Mfg. Co., Inc.

circle 175 on reader service card

Horizontal furnace line

Line of eight gas-fired "Weather-maker" furnaces whose size makes them ideal as unit heaters in commercial applications. Measure 19" x 27" x 42½" (44½" in cooling models). Weights from 120 to 200 lb. Compactness possible by curved steel heat exchanger which is swept by air from two blower openings. Exchanger coated with heat resistant aluminum and ceramic material. Honey-combing around single-port sheet metal burner enables air to mix with gas and eliminates high-velocity sound to assure quiet operation. Blower and motor serviceable from either side. Four models in Btu capacities of 80,000, 100,000, 105,000 and 125,000. Second 125,000-Btu model has higher air handling capacity. All can be equipped with enclosed horizontal cooling coils. Three



models have capacities of 80,000, 100,000, 125,000 Btu for heating only unless used with self-contained unit in "Thermo-Center" application. — Carrier Air Conditioning Co. Div., Carrier Corp.

circle 176 on reader service card

Downflow furnace

Gas-fired downflow furnace completes line which includes upflow models in six capacities from 70,000 to 120,000 Btu and horizontal models in four sizes from 80,000 to 125,000 Btu. New downflow measures 51 x 26 x 16-3/16 or 20-3/16" depending on capacity. In three sizes: 80,000, 100,000, 120,000 Btu, and each in straight heating model or high capacity cooling model equipped with extra capacity blower and high velocity permanent filters. — Day & Night Mfg. Co.

circle 177 on reader service card

Continued on page 89

AIR-LEC automatically...



opens the door to savings in your plant...

sturdy Air-Lec Door Operators eliminate expensive manual operation of your doors. Heavy duty wall, ceiling-pull, or post-mounted switches can be operated even from a fork-lift truck. Easily installed, these operators are designed to meet demands of hard service. Maintenance is negligible. Mechanical trip available where electricity is not desired. Power cylinder can be changed to meet changing power demands. Open YOUR door to savings. Write for details.

Manufacturers of automatic sliding, swinging and folding door operators since 1921



Listed in SWEET'S ARCHITECTURAL and INDUSTRIAL FILES

Formerly Schoelkopf Manufacturing Co., Inc.

AIR-LEC Industries, Inc.

Dept. R • 320 North Third Street • Madison 10, Wis

circle 3 on reader service card

Complete Guide for Soldering Fluxes — Make it Lake!

First of all, you can be sure Lake makes it. The standard LA-CO Fluxes include such specialized types as: Regular Flux; Silver Solder Flux; Stainless Steel and Chrome Flux; Aluminum Flux; Electro Flux. All use standard solders and methods—allow the mechanic to fabricate any metal with ease. Lake can handle any special fluxing needs, too, with experience and facilities that are second to none.

Best of all, LA-CO Fluxes have always set the pace. They're all acid-free and practically work-free. They go farther, go to work faster, and make the final joint as strong as the solder itself. Available in paste, liquid and handy stick form.

Sensational example of LA-CO leadership is the new Aluminum Flux, which permits soldering aluminum with ordinary soft solders.



They're all here! Write for Bulletin 113



The LAKE CHEMICAL COMPANY

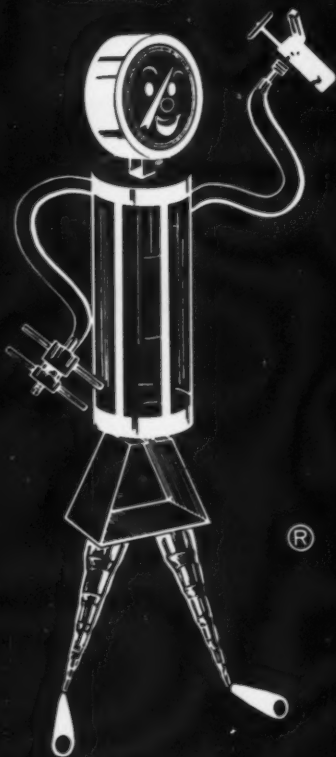
3082 W. Carroll Ave., Chicago 12, Ill.



circle 42 on reader service card

SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

"Robbi" *NOW* offers the



All four models are two-stage, Duo-Seal rotary units equipped with vented exhaust (gas ballast), power cord with in-line switch and are charged with oil ready for operation.

VENTED EXHAUST (GAS BALLAST)

The Vented Exhaust lets moisture pass through the vacuum pump instead of condensing into the oil. This means you can pull a higher vacuum faster, and do so repeatedly without the bothersome trapping and excessive number of oil changes required for units without this feature.

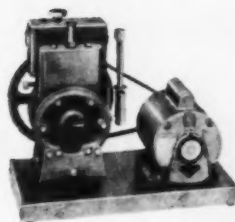
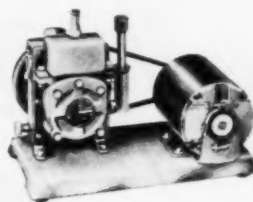
Contact your local "Robbi" wholesaler or write direct for additional information.

WELCH DUO-SEAL® PUMPS

to the Refrigeration Industry

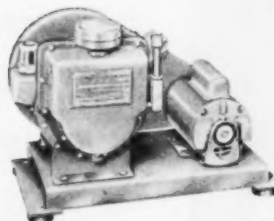
Recognized by the industry as top quality High Vacuum Pumps for evacuating and dehydrating refrigerant systems.

No. 13000-75
Vacuum—.1 Micron*
Capacity—.75 C.F.M.



No. 13000-2
Vacuum—.1 Micron*
Capacity—2 C.F.M.

No. 13000-5
Vacuum—.1 Micron*
Capacity—5 C.F.M.



No. 13000-15
Vacuum—.1 Micron*
Capacity—15 C.F.M.

* Vent closed—McCloud Type Gauge

ROBINAIR®

MANUFACTURING CORP.
MONTPELIER, OHIO

circle 63 on reader service card



IS WATER TREATMENT A HEADACHE FOR YOU?

With Chemicator you don't need to be an expert on water treatment. Chemicator already has the answers —

An analysis of the water in your area is all Chemicator needs.

Chemicator will provide the proper arrangement of chemicals in briquette form to automatically and properly treat the water in your customer's cooling towers and evaporative condensers.

Send for 12-page illustrated brochure.

CHEMICATOR is the modern answer for positive chemical control of recirculating water in cooling towers and evaporative condensers whether units are 5 or 300 tons. **CHEMICATOR** takes the guesswork out of water treating. As water varies in different localities, so does the chemicator prescription vary in the treatment of that water.

CHEMICATOR is simple in design—inexpensive to install and operate—ready to perform a life-time of trouble-free service.

** Distributed locally in many areas.*

Chemicator

CHEMICATOR DIVISION - ERLN PRODUCTS CO.
700 SO. FLOWER STREET, BURBANK, CALIF.

circle 26 on reader service card

SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS



Product DATA

Continued from page 86

Charging, purging valve

For charging or purging refrigerant lines or other lines not corrosive to brass or steel. Can be installed in branch of horizontal "T" or in end of vertical "T" in high point in system. Valve inlet machined inside and out for ods or odm connections. Valve furnished disassembled so brazing won't damage internal parts and side opening has flared connection. Seal cap with mechanically retained gasket chained to valve body. Is rated for 400 psi maximum and 300 F maximum. Size range: bottom connection $\frac{1}{8}$ through $\frac{1}{2}$ " odm and $\frac{1}{8}$ through $\frac{1}{2}$ " ods. Side connections $\frac{1}{4}$ and $\frac{1}{2}$ " flare for flexible charging hoses or copper tubing — *Henry Valve Co.*

circle 178 on reader service card

Duct weight rule

Gives square footage and pounds of rectangular and round duct up to 100' long; 0 to 120" semi-perimeter and metal gages. Consists of four scales printed on vinyl plastic laminated with clear plastic. Printed with red and black lines on white

or yellow background. When cursor moved to point where hairline intersects total footage line, total pounds and square feet of duct obtained to metal gage standards. Overall dimensions 8 x 11". Also included is galvanized-aluminum comparison chart, prominent sizes of angle iron weights, taping and insulation formulae. — *Carl Raymond & Co.*

circle 179 on reader service card

Directional diffuser

All-extruded aluminum directional diffuser (Type D) available in five frame styles and in 14 core patterns. All cores removable and interchangeable. Square and rectangular designs include 1-way flow, 2-way opposite flow, 3-way flow, and 2-way corner flow. Comes with snap-in, bevelled, drop collar, flange, and lay-on frames. — *Waterloo Register Co., Inc.*

circle 180 on reader service card

Oil-fired furnace line

"Weathermaker" line of 19 models in four major types of oil-fired furnaces. Types are horizontal, upflow, counterflow, "Lo Boy". Each has primary and secondary heat exchangers. Seven horizontal models range in heating capacity from 85,000 to 335,000 Btu. Four vertical and three counterflow units in 85,000, 125,000, 156,000 Btu. Five "Lo

Continued on page 90

BUILD YOUR BUSINESS ON \$43.00!



**Install • Service •
Find and Fix Leaks
with the**

PREST-O-LITE Refrigeration and Air Conditioning Outfit

This single compact kit costs only \$43, yet contains every essential piece of equipment for your work. You get three interchangeable open-flame stems to provide the right air-acetylene flame for soldering, brazing, or heating. Fit the sensitive leak detector stem to the same torch handle, and you can pinpoint the tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts of air. Compare that with soapy water!

In one sturdy carrying case, the kit also includes an adjustable gas pressure regulator, torch handle, and hose—everything for the installation, repair, and everyday maintenance of all types of refrigeration and air conditioning systems. See your local Prest-O-Lite dealer. Or write Linde Company, Division of Union Carbide Corporation, 270 Park Ave., New York 17, N.Y.

**LINDE
COMPANY**



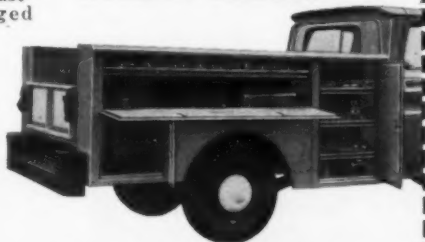
"Linde," "Prest-O-Lite," and "Union Carbide" are registered trade marks of Union Carbide Corporation.

circle 44 on reader service card



Save time, cut costs on every job. READING's "Magic Stowaway" compartments carry more tools and parts, keep everything at your fingertips, instantly available. Removable shelves, adjustable bin dividers. Rugged double-paneled doors with exclusive new never-bind hinges. Unitized welded construction for years and years of trouble-free service. It's the finest "workshop-on-wheels" you can buy—now at low mass-production prices! See your truck dealer or write for name of nearest distributor.

**NAIL
DOWN
MORE
PROFITS**
with
READING
**JOB-PLANNED
UTILITY BODIES**



READING BODY WORKS, INC., Dept. R 961, 420 Gregg Ave., Reading, Pa.

circle 59 on reader service card

Product DATA

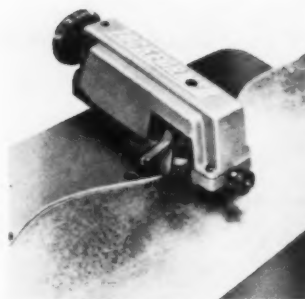
Continued from page 89

Boy" models from 100,000 to 250,000 Btu. Each insulated cabinet contains heavy gage heat exchanger, stainless steel combustion chamber, large blowers. Bearings life-lubricated and high voltage connections in one box. Air return on either side. Plenums for standard cooling coils available on all except

horizontal models. Burner not placed in horizontal unit at factory for easy attic installation. — Carrier Air Conditioning Co. Div., Carrier Corp.
circle 181 on reader service card

Power flanger

"Auto-Guide" power flanger in Models 16 and 18. Model 16 has working range of 16 to 24 gage; Model 18 handles 18 to 26 gage. Both automatically follow any edge fed into it—straight, irregular, inner, or outer radii. Calibrated dial sets machine for radii small as $\frac{3}{4}$ " and may be locked out for turning 2" radii. Model 16 forms flange about $\frac{3}{8}$ " high and has



forming speed of 18 fpm; Model 18 turns up $\frac{3}{4}$ " flange at same speed. Has all-steel forming head, hardened and ground shaft, case hardened steel forming rolls in head assemblies, machine cut gears, radial and thrust bearings.—Lock-former Co.
circle 182 on reader service card

YEARS IN USE... AND IT LOOKS LIKE NEW!



Erecta-Shelf installed in their ice cream hardening vault has taught General Manager Ben Collins of Goble's Dairyland Products (Wichita Falls, Texas) the value of genuine quality.

Condensation caused by defrosts have repeatedly soaked every surface of Goble's Erecta-Shelves. But there's no sign of rust or any other harmful effect.

Alterations of entire shelving sections are often made to conform to changes in product load. As much as 960 pounds has been stored on 4 foot sections without a sign of deflection! And, though strong, Erecta-Shelf is light enough to be assembled and handled by one man. No other shelving combines such strength and lightweight construction.



The Seal of Sanitation Quality!

Erecta-Shelf's steel rods (in heavy chrome plate or stainless steel) do not collect dirt as flat shelves do. They permit free air circulation for better results in the hardening room!

If you're interested in economical maintenance free shelving that performs and looks new year after year — and saves accordingly, write for literature today.

Available chrome plated or stainless steel

ERECTA SHELF®

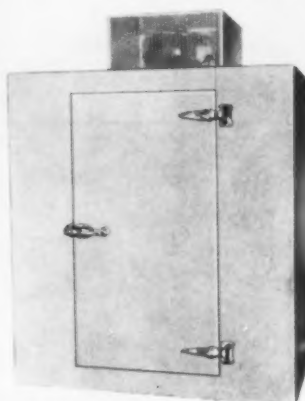
A quality product of METROPOLITAN WIRE GOODS CORP.

N. Washington St. and George Ave. • Wilkes-Barre, Pa.

circle 48 on reader service card

Utility freezer

Step-in utility freezer (Model UF-72) with 72 cu.ft. capacity. Built and shipped in sections, patented locking devices simplify its erection. A $\frac{3}{4}$ -hp. sealed plug-in panel refrigeration unit is only 15 $\frac{1}{2}$ " high and can be mounted on



freezer's ceiling. Cabinet measures 72 x 62 $\frac{1}{2}$ x 48". Finished in white baked enamel, unit has 20 gage steel exterior and 22 gage galvanized interior. Insulated with 5" glass fiber and all hardware cadmium plated. Hardwood slatted shelves optional. For backroom storage of foods at -10 F and below.—Nor-Lake, Inc.
circle 183 on reader service card

Low temperature case

Low temperature, 2-shelf display case for frozen foods. Features 14 $\frac{1}{2}$ " refrigerated wall shelf to carry sub-zero temperatures. Display compartment and wall shelf make more display area and display area capacity available. Upper shelf is 37" above floor. In 8 and 12' lengths, has 27-3/16" top for display of impulse items, and fluorescent lights under top of case. — McCray Refrigerator Co., Inc.
circle 184 on reader service card

FIELD FABRICATED REFRIGERATION SYSTEMS ARE DESTINED FOR EXTINCTION!



NEW KRAMER THERMOBANK-COMPRESSOR Systems make field-fabrication as obsolete as dinosaurs and open a new era of opportunity in refrigeration.

Gone is expensive, time-consuming and inefficient field-fabrication of refrigeration systems and with it your major headaches—shortage of skilled manpower and uncertain costs! Kramer's THERMOBANK-COMPRESSOR SYSTEMS are complete systems (high side and low side), factory engineered, instrumented, assembled, tested and run-in. For outdoor installations, they arrive on the job in all-weather aluminum housings, and "Winterstated" for year-'round automatic operation.

Requiring only connection of refrigerant lines and electrical service, they permit you to handle a much greater volume of business with your present skilled staff. Gone are costly delays

for components; you get a complete Kramer System with a single order eliminating reams of paperwork. Kramer's System rating assures accurate predictable performance. Costs are predictable, too, since errors in assembly or labor and material estimates are obviated.

Your customers get a better buy and a better system incorporating Kramer pioneered features including the unique THERMOBANK re-evaporative defrost with all-season Winterstat control for any size job and any temperature level.

To learn how Kramer THERMOBANK-COMPRESSOR SYSTEMS can brighten your profit picture, request Bulletin C 484A.

KRAMER THERMOBANK-COMPRESSOR SYSTEMS

KRAMER TRENTON CO. Trenton 5, N. J.

48 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

circle 40 on reader service card

**SERVICE**

Paul Darby, Pres.
RSES

**SALES**

Bill Tennity, Pres.
WACIA

**WHOLESALERS**

E. P. Sorensen, Pres.
ARW

**CONTRACTORS**

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**MANUFACTURERS**

Hy Jarvis, Chairman
ARI Expos. Committee

**INDUSTRY**

R. K. Serfass, Pres.
ARI



WE'LL ALL BE THERE WILL YOU?

12TH NATIONAL EXPOSITION AIR-CONDITIONING, HEATING & REFRIGERATION INDUSTRY LOS ANGELES • CALIFORNIA FEB. 12-15 • 1962

Here's the show you can't afford to miss—the biggest of all ARI Expositions. History-making opportunity to increase sales...talk to new sources of distribution...talk to manufacturers who can use your products...meet contractors and other specifiers...establish and maintain your brand loyalty among service personnel...mingle with engineers in every phase of your industry.

This show already has a record number of national exhibitors. You owe it to your company's future in this great industry to exhibit; to yourself to attend in person. ARW, RACCA, RSES, ARI, NWAHACA, AND WACIA will all have a dominant place in this tremendous event. They'll all be there! Will You?

Plan to exhibit now! Contact: George E. Mills, Show Director
1346 Connecticut Avenue, N.W., Washington, D.C. • COLUMBIA 5-0405

circle 2 on reader service card

SEPTEMBER 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

BUSINESS *Briefs*

Continued from page 14

ings and bearings is removed by refrigerant changing state in the presence of the motor windings. This motor, according to Am-Stan engineers, weighs less than 1/10 as much as currently available commercial designs.

The company is taking orders for Tonrac units now, expects to establish regular delivery schedules before the end of the year. Present prices, officials indicate, are somewhat higher than for reciprocating chillers of comparable capacity, but they expect this differential to be offset by greater reliability and longer life of the Tonrac units.

Power unit is remote

The basic Packaged Tonrac consists of a centrifugal compressor with its electric drive motor, a heat exchanger section consisting of condenser and cooler portions plus necessary piping, valves and controls.

Power is supplied from a separate motor-generator-exciter unit which converts 60-cycle line current to 300-cycle current for the Tonrac motor. The power unit can be located remotely. Its generator can be operated from any rotary prime mover, an important factor where steam or natural gas are less costly than electric power.

Contributing greatly to reduced size and weight is a design innovation that combines condenser and cooler in a common shell. Condenser is separated from the cooler by a pair of leak-proof divider plates with a gas space between them to insulate one from the other.

Oil cooler not needed

Because the Tonrac motor runs cool under all operating conditions, it was possible to design it for the optimum combination of operating characteristics to meet torque, speed, and efficiency specifications. In operation, Refrigerant-11 from the condenser sump is admitted into the low pressure atmosphere of the motor housing. Bearings are cooled by the motor cooling sys-

tem, so there is no need for a separate oil cooler.

Another Tonrac feature is its integral compressorless purge system. The pressure differential which always exists between condenser and cooler is used to exhaust foul gases from the condenser.

Moves mid-west office

New headquarters for Jamison Cold Storage Door's mid-west of-

fice is Kansas City, Mo. Former location has been Omaha, Nebr.

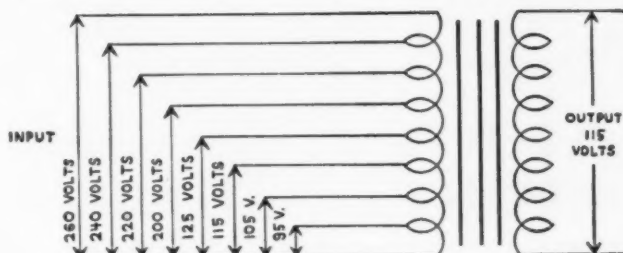
District manager of the office is A. C. Hoffbauer.

Arkla road show helps promote gas cooling

Arkla Air Conditioning Corp. representatives are touring the country, presenting lectures and skits to promote gas airconditioning.

Continued on page 94

WHAT YOU SHOULD KNOW ABOUT TAPPED WINDING TRANSFORMERS



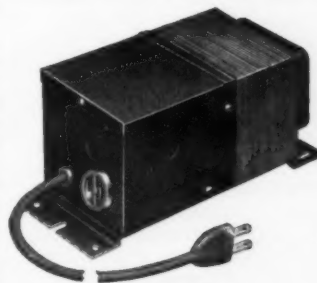
• Tapped winding transformers, solve both sales and installation problems, inexpensively. For example; where an air conditioner, refrigerator, or other appliance, powered by a 115 volt motor is to be installed in a location where only 230 volt power circuit is available, a tapped winding transformer plugs into the power circuit and supplies 115 volt service to the appliance.

Or, as another example; where the appliance installation is made in a location where supply voltage is *below* the normal required for good motor performance (105 volts or lower) then the input line connected to the proper taps can improve the low voltage condition and provide 115 volt service.

As shown in the diagram this transformer is designed with taps

for 260/240/220/200/125/115/105/95 volts primary connection and when connected to the proper primary taps will provide a 115 volt source of supply.

Available in ratings of 350, 550 and 750 VA. Other models provide 230 volt output from 208 volt available circuits. Write for Bulletin TW-320.

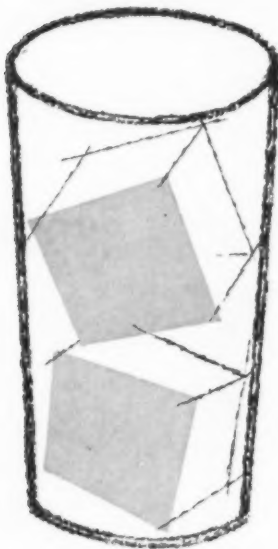


ACME ELECTRIC CORPORATION
829 WATER STREET CUBA, NEW YORK

Acme  Electric
TRANSFORMERS

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for clear
clean ice...



CSCO ice machine cleaner

Opaque, soft, bad tasting ice? Never . . . when you regularly use CSCO ICE MACHINE CLEANER! CSCO completely, clearly, cleans ice makers . . . in minutes. Safe, too . . . CSCO will not harm operator or equipment. As for economy . . . one bag of CSCO usually is sufficient to clean 2 small ice-makers. Packed in ½ pound polyethylene bags, 25 bags per carton. Insist on a quality Solvex Product.

CHEMICAL SOLVENT CO.
BIRMINGHAM, ALABAMA



ASK
YOUR
WHOLESALE

circle 20 on reader service card

BUSINESS *Briefs*

Continued from page 93

It's the aim of Arkla to carry its message to every employee in the gas industry, according to W. G. Wepfer, company vice president and general sales manager.

The show dramatizes the main phases of gas airconditioning sales and describes proven sales programs.

Road show scripts and slides are available to Arkla's gas company and dealer customers for making presentations to their own employees and customers.

2 new offices opened

Gaffers & Sattler has established a new south-central division with offices in Dallas, Texas. Complete warehouse facilities will be located there.

New regional manager is David

Stacy, who will direct a 7-man staff. The new office was opened to give better service to the company's distributors in Texas, Louisiana, Mississippi, and Oklahoma.

The 22nd location for A. Y. McDonald Mfg. Co. is a satellite branch at Rochester, Minn. N. J. Mathias, manager of the Minneapolis branch, will supervise operations.

W. L. Cox will manage the Rochester branch, started to serve southeastern Minnesota.

Canadian firm signed

General Steel Wares, of Toronto, Canada, will manufacture Fedders central air conditioners, under a new agreement announced by U. V. Muscio, executive vice president of Fedders Corp.

The Canadian firm has been manufacturing Fedders room air conditioners exclusively since 1959.

Hong Kong site of 3rd Worthington conference

Twenty-one countries were represented at Worthington Corp.'s 3rd International Air Conditioning and Refrigeration Conference in Hong Kong recently. N. A. Gardner, manager of international sales of airconditioning products, was chairman of the conference, whose theme was "Building New Worlds with Engineered Climate."

P. Li was appointed resident sales engineer for the Far East.

Other conferences have been held in Havana and San Juan.

Regional office opens

A new sales and engineering office has been opened in St. Louis, Mo., by Flexible Tubing Corp. F. Richard Krabbe, senior sales engineer for the company, is in charge.

Belcher-Young unveils cooling tower changes

Southeastern sales representatives for Belcher-Young of Tampa, Inc. were present recently as several design changes were unveiled for the firm's line of cooling towers.

New features include reinforced glass fiber components; sides of towers impregnated with pale blue

WITT REMOTE AIR COOLED CONDENSERS



With The Low Silhouette

Efficiency, economy, dependability—those three words most effectively describe the operation of Witt Air Cooled Condensers. Available in a wide range of centrifugal blower and fan type models, for single or multiple compressor installations, for indoor or outdoor applications, you'll find a Witt Air Cooled Condenser to handle any size air conditioning or refrigeration system. Winter control systems available for low temperature areas—multiple circuiting available at no additional charge.

Write For Complete Witt Catalog

A. H. WITT COMPANY, INC.

940 N. Sycamore Ave., Los Angeles 38, Calif.

circle 78 on reader service card

pigments to blend with the sky; and basin floor on all models made of laminated fir coated with epoxy resin to prevent expansion, contraction, or leakage.

New company officers are Russell L. Harrell, president and treasurer; George H. Young, executive vice president; and Henry G. Graham, vice president and sales director.

Pyramid changes name

Pyramid Instrument Corp. changed its name effective Aug. 1 to Amprobe Instrument Corp., according to president Sam Koch. In announcing the change, Koch said at least two to three new major products would be introduced each year as Amprobe moves into its planned expansion program.

The sales department is being set up under four sales managers: Amprobe instruments; Remcon wire devices; recorders; and export.



MINUTES EQUAL MONTHS on this analog computer used by Minneapolis-Honeywell Regulator Co. temperature control engineers to duplicate climate and building conditions anywhere in the world. Research engineers can obtain technical data in 15 minutes that would take years to compute otherwise. Computer inputs simulate weather conditions and solar changes, while information about building size and construction, insulation, airconditioning needs, and ductwork is fed into the machine. Results are used to evaluate new temperature control capabilities.

Kreuter named manager of Development Center

The Mid-West Development Center, formerly Robertshaw-Fulton's Mairco Division at Goshen,

Ind., will be managed by Kenneth G. Kreuter.

Kreuter joined Mairco in 1955 and had been director of engineering since last year. The center will develop new products in domestic and commercial control fields.

Six manufacturers join new ARI product section

A new product section has been organized by Air-Conditioning and Refrigeration Institute for non-resi-

dential warm air heaters. Six companies joined at the organizational meeting.

Elected chairman was N. H. Stern, industrial marketing manager of Lennox Industries, Inc. The section will cover heaters of 200,000 Btuh output and up.

Member companies are American Foundry & Furnace Co.; Mammoth Industries, Inc.; National Heater Co., Inc.; Tjernlund Mfg. Co.; York-Shipley, Inc.; and Lennox.

Continued on page 96



WHATEVER YOUR LOW-TEMPERATURE INSULATION NEEDS UNITED CAN SERVE YOU

From engineering design to final installation in CORKBOARD or EXPANDED POLYSTYRENE

United's patented process BB Corkboard is the long established, job tested insulation material. Block baked of 100% cork with no fillers or binders, it has a low K factor, is fire retardant, insect and vermin resistant.

Equally effective is Uni-Crest expanded polystyrene, United's newest development in insulation materials. This modern, lightweight, snowy white material, composed of minute, individually closed cells, has a low K factor, low moisture absorption, and retains its insulating value indefinitely. It is strong, flexible, easy to handle and inexpensive.

Experienced engineers, at United's branch offices coast-to-coast, offer complete consulting and design ser-

vice on both cork and Uni-Crest installations. Each installation is specifically planned to meet requirements of the job. Skilled crews, working out of these same offices, carry out the entire job of erecting insulation under direct supervision of engineers responsible for the design. In this way you are assured of undivided responsibility for performance of the entire installation.

Both Cork and Uni-Crest are available in a wide variety of sizes in board and pipe covering form. In addition, United provides cork lagging and discs for tank and filter application, as well as a self-extinguishing board and pipe covering of Uni-Crest. Write for more complete information.



UNITED CORK COMPANIES

Since 1907

7 Central Avenue, Kearny, New Jersey

Branch offices or approved distributors in all key cities



circle 71 on reader service card

BUSINESS *Briefs*

Continued from page 95

Dow contractor program urges insulation quality

Dow Chemical Co.'s Approved Insulation Contractor (AIC) program, started four years ago, is aimed at assuring high quality ap-

plication of its low-temperature insulation. It encompasses 102 firms in 42 states.

AIC is designed to assure satisfactory installations, but makes provisions for fixing responsibility if such satisfaction does not result.

Each participating insulation contractor signs an agreement with Dow to follow its recommendations for installing "Styrofoam," the company's expanded polystyrene.

The manufacturer accepts responsibility if the insulation does not

comply with specifications up to one year following installation. Contractors assume responsibility if dissatisfaction results from a failure to follow specifications or to use proper workmanship.

In four years, Dow says, there have been only two failures — one for each reason. In both cases, repairs were made at no cost to the owner.

An insulation contractor, once approved, attends classes at Dow headquarters in Midland, Mich., for instruction by company engineers.

During work on installations, the approved contractor is free to consult with Dow technical personnel or with engineers who make regular field inspections.

Frick's Miami office serves Latin America

A new regional office at 1190 N.E. 125th St., North Miami, Fla., is headquarters for Frick Co. sales activities in the Caribbean, Mexico, Central and South America.

Joaquin Alvarez, who has been head of Frick's international sales department, has been named to head the new office.

Modern plant heating, cooling is show topic

Current practices in heating, ventilating and cooling in modern plants will be discussed at the Industrial Building Exposition & Congress, Sept. 25-28 at the New York Coliseum.

Russell F. Stem of Smith, Hinchman & Grylls Associates, Inc., Detroit, will present the subject on Sept. 26.



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Jamison **LIGHTWEIGHT** Sliding Doors Solve Space Problems in Dairy Service



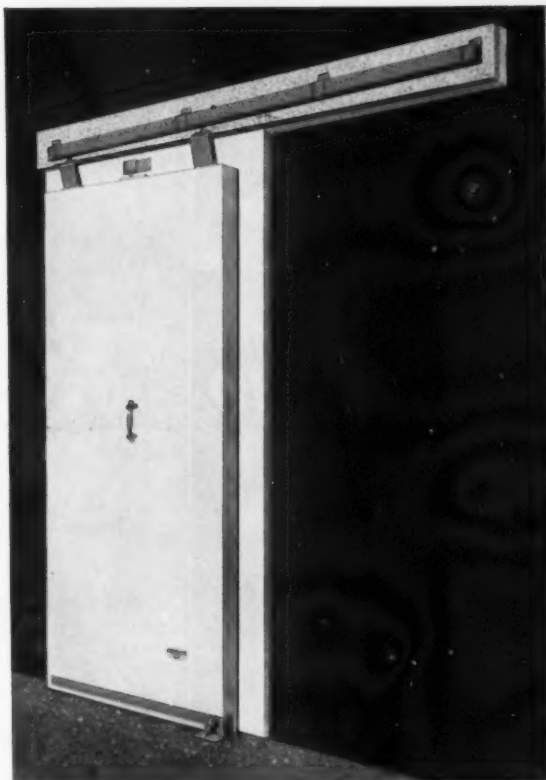
New Jamison Horizontal Sliding Door

This is an economical, serviceable door designed without frills or extras. It is easy to operate, it provides tight closure, it is lower in cost than many other doors.

Other Advantages:

available for cooler or freezer service
inclined track for self closing
#26 ga. galvanized steel cladding: front, edges, back
wedge-type, 3-point closure

*For latest bulletin write to
Jamison Cold Storage Door Co., Hagerstown, Md.*



Jamolite® Horizontal Sliding Door

The lightweight, all-plastic Jamolite Door is efficient, good looking and easy to operate. This attractive flush-fitting door is available in white and four colors.

Other Advantages:

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People ON THE MOVE

James L. Neall is appointed Mueller Climatrol's hydronic sales supervisor. Neall has been with the hydronic product group, National-U.S. Radiator Co.

Johns-Manville Corp. promotes William J. Scott from Los Angeles sales representative for its pipe division to district manager, distributor sales, Seattle, Wash. He succeeds C. J. Rossio, transferred to Los Angeles as special representative, industrial insulations division.

James McWhirter is elected a vice president of Pennsalt Chemicals Corp. He joined the firm in 1945 and became general manager, industrial chemicals division in 1960.

Miss Fayma L. Frantz is elected treasurer and corporate secretary, Peerless of America, Inc.

Furnas Electric Co. promotes James M. O'Rourke to sales manager from manager, o.e.m. marketing. He succeeds W. F. Lisman, named a vice president.

Milwaukee Electric Tool Corp. appoints Jack Jennings and Phil Pachulski as sales representatives. Jennings will cover Kentucky, Tennessee, and Mississippi; Pachulski, western Michigan.

Simpson Electric Co. appoints Jack De George as sales administration manager. He has been repair department manager since 1958.

Factory manager for Roy Follett Corp.'s Phillipsburg, N.J. plant is E. Henry Bifelt.

New sales engineer for Connor Engineering Corp.'s New York office is Ramon Sarmiento.

Allen Industries, Inc. appoints Frank E. Parsons to direct national sales for its polyurethane foam products.

Buensod-Stacey, Inc. names Robert F. Hayes to promote sales of dual duct systems for heating, airconditioning and ventilating of schools and colleges. Hayes was formerly advertising manager, Anemostat Corp. of America.

Three Ranco Inc. executives are named to engineering positions. New chief engineer is John Lieberman, who joined the company in

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CABINET CO., Inc.

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1949; product manager is Thomas Syfert, with Ranco since 1951; assistant project manager is Lewis Eggert, in the firm since 1950.

J. R. L. Williams is elected vice president, European operations, Worthington Corp. Appointed as manager, parts service, marketing services group, is Alfred H. Cercone. Williams was formerly with International General Electric Co.; Cercone has been manager, parts service, compressor and engine division, since 1954.

Elected president of Refrigerating Specialties Co. is Charles C. Hansen III. He has been the company's chief engineer for eight years.

Assigned to Payne Co.'s Southern California territory as sales representative is James Limbaugh.

New manager of sales training for Dunham-Bush, Inc. is Peter J. Dalton. He was formerly vice president of sales, Welbilt Air Conditioning and Heating Corp.

Robert E. Drury is appointed vice president, administration of King-Seeley Thermos Co. He succeeds William E. Bandemer, who is retiring. Drury was formerly vice president of manufacturing, Redmond Co., Inc., a subsidiary of Controls Co. of America.

District manager in Chicago for Lewin-Mathes Co. is Robert Leonard.

Revere Copper and Brass Inc. elects John H. Eikenberg as president and member of its executive committee. He succeeds Charles A. Macfie, who is retiring. Elected a vice president and general manufacturing manager is William T. Bertier. Fritz C. Hyde, Jr. is named to the board. Eikenberg has been with the company since 1924; Bertier since 1929; and Hyde since 1935.

BUSINESS *Trends*

Continued from page 8

should present new opportunities for trade to us, creating a broader division of labor between nations. An exchange of goods can benefit us whether those who make the change live here or not," the report went on to say.

"Whether the ultimate effects help or hurt us depends on what economic, social, and political policies we pursue," concludes the study.

Latest NHAW figures

Total dollar sales for June showed a 10.3% increase over last year, report members of North-American Heating & Airconditioning Wholesalers. Sales for the first six months are up 5.2% over Jan.-June, 1960. Inventories are up 5.6%, comparing both June 30 figures.

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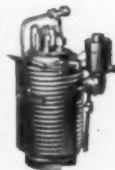
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Why pass up steady big-time carbonator business? Easy as 1-2-3 to install—the Bantam-100 takes no time at all! Just 3 simple connections, hook up the power, and the mighty little Bantam-100 is off and running—way out front in performance! It's fully automatic and worry free! Let the Bantam join your sales force and watch the feathers fly!

TEMPRITE CARBO-COOLER
COOLS and CARBONATES from THE SAME UNIT! Delivers up to 300 glasses hourly! Compact replacement unit for cold drink vending machines, or wherever carbonated water is served. Famous Temprite instantaneous cooling principle and trouble-free service. Measures only 7½" O.D. x 15" height.



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F. M. MASON franchise representative
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Advertisers IN THIS ISSUE

A

Acme Electric Corp. 93
Air Conditioning Research Institute 92
Air-Lec Industries, Inc. 86
Airserco Mfg. Co. 78
Alco Valve Co. 1
Allied Chemical Corp.,
General Chemical Div. 47
Allin Mfg. Co. 72
American Automatic Ice Machine Co. 15
American Telephone & Telegraph Co. 12
Amprobe Div.,
Amprobe Instrument Corp. 53
Anaconda American Brass Co. 34
Anderson Chemical Co., Inc. 82
Ansul Chemical Co. 25
Armstrong Cork Co. 70

B

Bacharach Industrial Instrument Co. 62
Bell & Gossett Co. 2
Bendix-Westinghouse,
Evansville Div. 69
Bohn Aluminum & Brass Corp.,
Danville Div. 33

C

Carrier Air Conditioning Co.,
Div. of Carrier Corp. 80
Chemical Solvent Co. 94
Coldin Cabinet Co., Inc. 98
Controls Co. of America,
Heating & Air Conditioning Div. 22

D

Dole Refrigerating Co. 96
Dunham-Bush, Inc. 63
E. I. du Pont de Nemours & Co., Inc.,
Freon Products Div. 28
E. I. du Pont de Nemours & Co., Inc.,
Industrial & Biochemicals Dept. 79

E-F

Erlen Products Co.,
Chemicator Div. 88
Rey Follett Corp. 77
Freon Products Div.,
E. I. du Pont de Nemours & Co., Inc. 28

G

Garman Co. 77, 96
General Electric Co.,
Instrument Dept. 7
Gustin-Bacon Mfg. Co. 10-11

H

Halstead & Mitchell Co. 76
Hart & Cooley Mfg. Co. 16
(Zone B copies only)
Henry Valve Co. 9
Highside Chemicals, Inc. 32

I-J

Industrial & Biochemicals Dept.,
E. I. du Pont de Nemours & Co., Inc. 79
Jamison Cold Storage Door Co. 97
Jarrow Products, Inc. 85

K

King Zeero Co. 82

Kodiak, Inc. 23
Koppers Co., Inc.,
Plastics Div. 83
Kramer Trenton Co. 91

L

La Crosse Cooler Co. 60
Lake Chemical Co. 86
Larkin Coils, Inc. 31
Linde Co.,
Div. of Union Carbide Corp. 89

M

Madden Brass Products Co. 78
Marley Co. 4
Marsh Instrument Co.,
Div. of Colorado Oil & Gas Corp. 81
McQuay, Inc. 59
Metropolitan Wire Goods Corp. 90
Milwaukee Electric Tool Corp. 71
Goodloe E. Moore, Inc. 98
Mortell Co. 19
Mueller Brass Co. Cover 3

N

Nibco Inc. 57
Nor-Lake, Inc. 55

P-R

Penn Controls, Inc. 84
RBM Controls Division 58
Radio Corp. of America 13
Ranco Inc. 64
Reading Body Works, Inc. 89
Redmond Co., Inc.,
Distributors Div. 20-21
Refrigeration Research, Inc. 96
Reznor Mfg. Co. 75
Robinair Mfg. Corp. 87

S

Scotsman, Queen Products Div. of
King-Seely Thermos Co. 73
Sporlan Valve Co. 29
Square D Co. 5
Stic-Klip Mfg. Co., Inc. 62
Superior Valve & Fittings Co. 6

T

Temprite Products Corp. 99
Tenney Engineering, Inc. 61

U

Union Carbide Corp.,
Linde Div. 89
United Cork Cos. 95

V

Viking Copper Tube Co. Cover 2
Virginia Chemicals & Smelting Co. 35-36
Volkswagen of America, Inc. 26-27

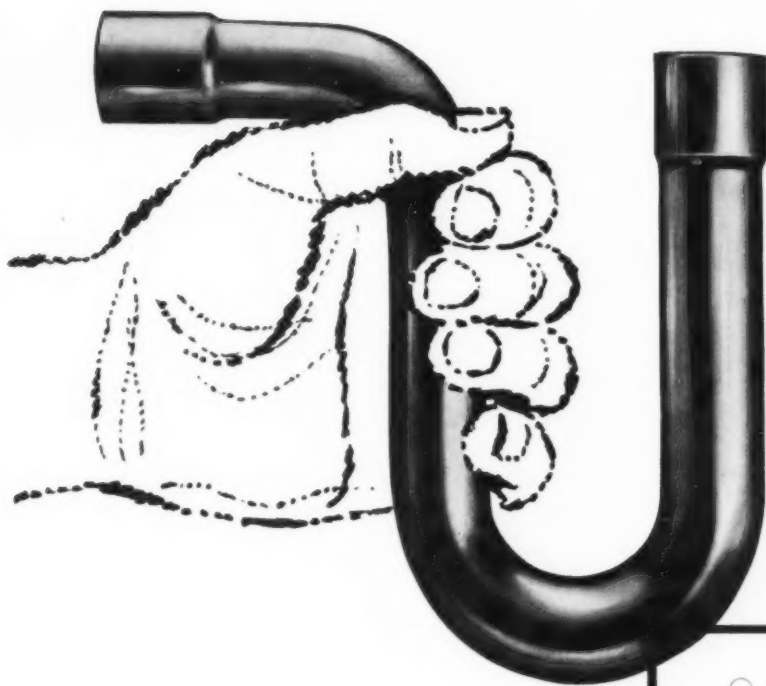
W

Wabash Corp. 99
Watsco, Inc. 74
Wheel Trueing Tool Co. 60
A. H. Witt Co., Inc. 94
Wolverine Tube,
Div. of Calumet & Hecla, Inc. 17-18

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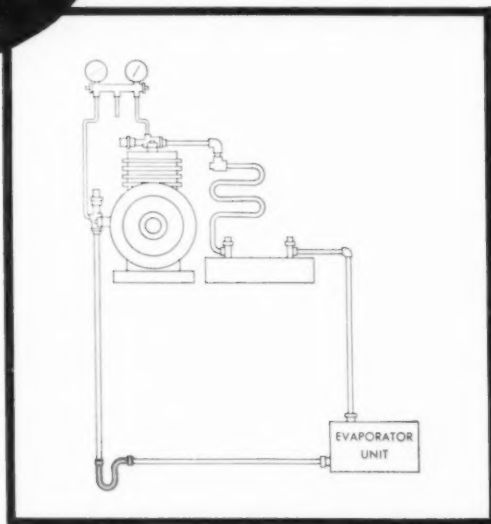


Streamline wrought-copper suction-line P-Traps, just introduced by Mueller Brass Co., answer a definite demand for an effective method of promoting efficient oil migration in modern refrigeration systems. Today, for example, in many large food markets and other outlets employing refrigeration, compressors and condensers are installed on balconies. Such remote units are likely to have long horizontal suction lines or vertical risers exceeding 3' in height which create the problem of unsatisfactory oil return to the compressor. The installation of a Streamline Suction-Line P-Trap quickly and effectively eliminates this problem because the P-Trap drains the oil from the horizontal runs approaching the risers; the oil then migrates back to the compressor, either as a rippling oil film, a mist, or a transparent colloidal dispersion. Vapor velocity can fall as low as 160 feet per minute and satisfactory oil return can still be achieved when a Streamline P-Trap is installed.

* The need for, and the effect of P-Traps on systems having long horizontal suction lines or vertical risers, is fully discussed in Section 66 of the R.S.E.S. Service Manual.

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332

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